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ABSTRACT

An introduction by Jon Baggaley provides background information on this international conference and its participants, and introduces 10 papers which were presented. The papers are as follows: (1) "Teaching Production Research and Design: The Interface of Theory and Practice" (James M. Linton); (2) "The Impact of Television on Adolescents in South Africa" (D. P. van Vuuren); (3) "Why Teenagers Watch Television: Implications for ETV Production" (Gary M. Gould, Michael J. Holosko, and Jon P. Baggaley); (4) "The TV Ontario Academy: The Use of Television Broadcasting and Computer-Managed Learning for Adults" (Ignacy Waniewicz and Robert Tilroe); (5) "Evaluation of Television Formats and Viewing Behaviour" (Barry S. Green and James Matsui); (6) "Predicting Performer Effectiveness: Methodologies for TV Presenter Selection" (Gary Coldevin and Robert Bernard); (7) "Biometric Communication Research for Television" (M. S. Malik); (8) "Second Generation Electronic Testing Technology Applied to Television Evaluation" (Rand Nickerson); (9) "Formative Research in Rural Education" (Kirk Smith and Jon P. Baggaley); and (10) "Visual Biases in Television Campaign Coverage" (Hans Kepplinger and Wolfgang Donsbach). References are included for most of the papers and a list of conference participants is appended. (JB)

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Experimental Research in TV Instruction

Volume 4

Edited by
Jon Baggaley with Patti Janega

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INTRODUCTION

In September 1981, sixty TV producers, researchers, and policy-makers gathered in St. John's, Newfoundland for the fourth in an annual series of conferences devoted to Experimental Research in Televised Instruction. Media producers and researchers rarely meet together in this way. Although their basic interests are intimately related, the two types of professional normally operate from entirely different standpoints. Few producers have time for academic theory, and communications researchers seldom concern themselves with the practical problems of media production. The Newfoundland conferences - started in 1978 by Arthur Sullivan of Memorial University - aimed to redress this problem. By concentrating on areas of experimental research specifically dealing with TV production issues, the conference series has succeeded in attracting a regular attendance by delegates from all continents of the world.

The 1981 Conference was attended by delegates from across Canada, from Mexico, South Africa, Sweden, the United Kingdom, United States, and West Germany. The current Proceedings contain most of the formal contributions to the Conference, and indicate the rapid development of teaching and research methodologies in educational media studies. As before, we define 'educational' in the broadest sense, whether it be the use of television to instruct and manipulate at a broadcast level or in the classroom.

The first paper, by Jim LINTON, indicates the steps taken to bridge the gulf between theory and practice in a media studies program at the University of Windsor, Ontario. Dan van VUUREN describes the massive national study of television's impact on the young people of South Africa since its introduction to that country in 1976. Gary GOULD, Michael HOLOSKO and Jon BAGGALEY maintain this theme with an account of the ways in which audience research influenced the design of a TV series for teenagers on City-TV, Toronto.

Closely related papers describe the development of the TV Ontario Academy (Ignacy WANIEWICZ and Robert TILROE), and the preferences of viewers for TV production and performance characteristics (Barry GREEN and James MATSUI). Both of these papers derive from the Ontario Educational Communications Authority, one of Canada's leading centres of broadcast research and evaluation. The performance attributes which lead to the most effective TV presentations from an educational point of view are then discussed by Gary COLDEVIN and Robert BERNARD.

A single aim of the research and evaluation studies reported at the Conference is the formulation of guidelines for TV producers to use within the production process. The Proceedings in this series have reported the increasing use of 'formative evaluation' procedures in this respect, and the increasing sophistication of electronic technologies designed to collect and analyze audience responses with the minimum of delay. The range of technological possibilities now open to formative evaluators and researchers is vast - as indicated in the paper on biometric research techniques by Miroslav MALIK. New uses of the microcomputer in formative evaluation are discussed by Rand NICKERSON.

Five years after the unveiling of the Program Evaluation Analysis Computer (PEAC) by Nickerson at the 1979 Newfoundland Conference, the system remains without doubt one of the most brilliant communication research technologies currently available. The insights it will afford into the moment-by-moment effects of educational production promise to be immense. An early use of the system in the development of a film for Canadian seal fishermen is reported in the paper by Kirk SMITH and Jon BAGGALEY.

Naturally, knowledge of the effects of production technique in an educational context can also be used to manipulate the public for other purposes. Hans KEPPLINGER and Wolfgang DONSBACH indicate the selective uses of camera technique to influence the images of political party leaders during the 1976 West German Federal election. Their paper indicates graphically the dual role that media researchers will increasingly have to take - educating the media producer of the ways in which production techniques may constantly be improved for the public's benefit, while also warning the public of their exploitative uses.

Other contributions to the Conference were the multi-media presentations by Shari COOTE (TV Bureau of Canada) concerning 'cooperative advertising' techniques, and "Who Killed Kennedy?", a tour-de-force of media dexterity by Matthew SMITH. It is unfortunate that neither of these presentations can be captured in this volume.

As Conference Organiser, I wish to thank the members of Memorial University who gave valuable assistance in the planning and execution of the Conference - to Dr. Maxwell House, the University's Associate Dean of Continuing Medical Education & Clinical Affairs, for his opening address; to the session chairmen; to Pauline Jones, Mary Lawlor, Trudi Churchill, Audrey Snow, Gar Fizzard, Ted Braffet, Mary Kennedy, and Gary Hollett; to the University's ETV Services, Extension Media Unit, Psychology Department, Administrative Services, University Relations and Comptroller's Office; also to those members of the Newfoundland & Labrador Department of Tourism, Arts & Culture Centre, Bank of Montreal, City Hall, St. Clare's Mercy Hospital, Carling O'Keefe, Inc., and the Knights of Columbus for valuable assistance, facilities and materials.

My particular thanks go to the excellent Conference Secretary, Gerri Barbour, and to the full-time support of Joan Sharpe and Paul Noseworthy. The Conference would not have been possible without the generous financial assistance of the Social Sciences & Humanities Research Council of Canada.

POSTSCRIPT

The editing and publication of these Proceedings has been seriously delayed in part by financial factors, but also by my own move from Memorial to Concordia University in Montreal. The eventual publication has been undertaken by Concordia, with the patient typing assistance of Anne Brown, Mary Townsend (cover design), and the University's Printing Department. For her unstinting work as the volume's co-editor, my final and most sincere thanks go to my colleague, Patti Janega.

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September 1984

TEACHING PRODUCTION RESEARCH AND DESIGN:
THE INTERFACE OF THEORY AND PRACTICE

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TEACHING PRODUCTION RESEARCH AND DESIGN THE INTERFACE OF THEORY AND PRACTICE

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ABSTRACT

The paper discusses the graduate training available at the University of Windsor in areas of media production and design. Courses in this field attempt to give the student a practical appreciation (founded on a theoretical understanding) of the issues related to the creation and sharing of meaning via the communications media. From the perspective of a variety of disciplines and methodologies they examine the nature of the production process and the way that production fits into the overall communications process. Utilizing various theoretical approaches and existing empirical evidence, students at Windsor design and carry out productions, the results of which are assessed in relation to existing theory and research findings.

In TV production training contexts, the practical relevance of research such as is emphasized in the current Conference is speedily verified. The paper discusses the types of production research having the most immediate relevance to TV practice, and the styles of research and evaluation likely to be most useful in the development of future TV methods. Future prospects for University and TV industry-based courses in communications techniques are discussed.

As an educator who is also both a researcher about and practioner of production, my concern has long been to bridge the gulf that we all recognize exists between media researchers and media practitioners. This paper describes one attempt (though far from completely successful) to accomplish such a task. The course which I teach on production research and design has both a basic or a theoretical and an applied or practical orientation to it: It utilizes what theoretical and empirical knowledge currently exists about the production process and it attempts to put that knowledge into practice and thereby "test" it in the "crucible" of production.

Before going into detail about the course itself, however, let me expand on the rationale for its development. The gulf between researchers and producers referred to above has been noted by a number of writers--not the least of whom has been Baggaley (Baggaley, Ferguson and Brooks, 1980). But the individual who has been the most articulate about this particular manifestation of the clash of C.P. Snow's "Two Cultures", and who was the most influential on my thinking about the matter, was William Belson who was for many years a member of the Audience Research Department of the BBC.

Belson (1967) points out that the under-utilization of television research by the television industry is largely a result of the attitudes of both the researchers and the industry production personnel, and the constraints (mainly lack of time) built into the television production process. While there is little we can do about changing the latter, we certainly have considerably more control over the attitudinal aspects, and the very fact that representatives of these "two cultures" are meeting here in such large numbers indicates a desire to effect a common understanding.

Researchers for their part, Belson says, must become less remote from the production scene by becoming involved in and learning about the production process, and by establishing the personal contacts with production personnel which will allow the researchers to determine producers' needs and interests. (The television workshop to be held at the conclusion of this conference is the kind of simulation exercise which can begin to foster such understanding--and it is a device which my department employs in a number of our courses to sensitize our research-oriented or non-production students to the vagaries of production.) Such sensitivity to production on the part of researchers will contribute to the generation of information that has more pertinence to producers and that is presented in a form the producers can more readily utilize, thereby possibly even circumventing the time constraints mentioned earlier.

Producers, on the other hand, should be more accepting of the role which research can play in the production process, according to Belson. They should also realize that research is not inherently at odds with the creative endeavour. In order to foster such attitudes in producers, it is incumbent on the researchers to make the first efforts as described above, and to remember Belson's caveat that research should not be made to interfere unduly with the creative process. Failure to heed the latter advice can lead to the computer-like success of such programs as Sunn Classic Pictures' In Search of the Real Noah's Ark (Jowett and Linton, 1980) or to what Ron Powers (1977) characterized as the "Researchthink" demise of ABC's AM America, neither of which results can really be considered a victory in the battle to win the hearts and minds of producers.

My efforts in devising such a production research and design course, then, were governed by Belson's ideas just mentioned, plus the hope also engendered by Belson that eventually "a store of information" about production research could be amassed and passed on to potential researchers and producers. In that way, not only would attitudes be changed, but would-be researchers and producers would also be assimilating a body of knowledge which would shift their activities to a higher level of accomplishment. But only time will tell whether this is possible or simply misplaced idealism.

In order that these goals be accomplished in the course, production research had to be defined as involving the creation of materials in one of the audio-visual media (most commonly the video medium because of the low-level or absence of direct costs involved in this medium in the university environment). This type of research is distinct from research about production which does not involve the creation of such media materials, but entails the study of some aspect of the production process. It should be pointed out, however, that the creation of materials in production research is based on current theory and research about production, and the productions so created are eventually tested to determine their results. In other words, the students would be expected to act as producers of media content, but producers guided by theory and research in addition to creative intuitions.

The course then would have to have essentially two components: seminars in which the students would examine and consider current theories and empirical research pertinent to the production process, and projects which they would undertake individually or in small groups. In the projects, the students would design productions based on relevant theory and research, execute those productions, and finally assess or evaluate them in some manner to determine whether or not (and hopefully why or why not) the objectives they had set for the productions had been met. It probably should be pointed out at this point that the course was to be offered at the graduate level, and consequently students could be expected to have a certain fundamental or rudimentary knowledge and skill in the areas of both media production and empirical social science research.

Having made the distinction between production research and research about production, it was necessary to quickly add that production research (as an instance of applied research) made use of the more basic research results of the latter category. In noting that, four broad categories of production-related research were identified:

1. Content or subject matter research: This involves locating sources concerning a subject on which a production is based, compiling information on that topic and organizing or structuring such information. As far as I am aware, these types of production research skills are never taught, it being assumed either that such knowledge is innate or can be quickly acquired through direct 'sink or swim' kinds of experience. Unfortunately, given all the other concerns and demands of the course, this area remains unexamined by the students.

2. Audience research: This category includes (a) the classic demographic or social characteristic research concerning target audiences, plus (b) viewing behaviour research which investigates the way in which audiences perceive and interpret media materials.

3. Mediation research: Using a term borrowed from Baggaley, Ferguson and Brooks (1980), this type of research examines the effects of various technical or stylistic media variables (e.g. camera angle, lighting key, etc.). It obviously involves an examination and understanding of the viewing process covered in viewing behaviour research just mentioned.

4. Evaluation or assessment research: This category entails the examination of techniques used to make judgements about the effectiveness of media materials on either (a) a summative basis (i.e. long term, after-the-fact studies) or (b) a formative basis (i.e. immediate studies, even ones done during production with the idea of modifying the production in process on the basis of the results obtained).

Given the broad scope of the course, it is obvious that its perspective had to be multidisciplinary: psychology provided insights about the nature of the viewing process; sociology provided information about audience demographics; anthropology shed light on the organization and systemic characteristics of the production process; semiology and structuralism eventually led to a better understanding of the nature of the technical/stylistic elements of the media and the way in which they create and convey meaning. (I say "eventually" because I have found that semiology and structuralism are the conceptual approaches which students have the most difficulty assimilating.) As a result of this multidisciplinary approach, students came into contact with (but certainly not fully conversant in) a myriad of research methodologies. Among these were controlled experiment, field study, sample survey, case study, participant observation, content analysis, simulations and structural/semiotic analysis.

While our knowledge about the production process is being discussed in theoretical terms in the seminars, the students are also putting that knowledge into practice by developing their projects. Once I have approved their project proposals (which outline the objectives of the study, supply justification for it in either theoretical or practical terms, and describe their proposed method of assessment), they embark on a search of the literature pertinent to their particular endeavour. To save some time at this juncture, I make such searches from previous years available to the students so that the major works are quickly located and more attention can be paid to locating the less obvious sources. It is worth noting here that the research literature about production is really a "fugitive" literature, being located in a vast array of journals and periodicals--and much of it not being published at all, existing either as papers or manuscripts--or reports kept under wraps by broadcasting institutions. But then I am sure that most of you are well aware of that fact.

As the search of the literature begins to fall into place, the students start to design their productions based on what they have learned from this search. They locate source material, write the scripts, locate the talent and crews, book studio time, and supervise production. About the time this process is drawing to a close, they operationalize their assessment method and arrange for test audiences or whatever process is appropriate to their situation. The production is shown, reactions recorded and the results assessed. As you must appreciate, this is all very time-consuming, and consequently most of the materials created are quite short (in about the eight- to twelve-minute range).

Let me give you an example to help clarify the situation. One student in a recent class had an undergraduate degree in dramatic art and had spent several years working as an actor in children's theatre. He had transferred that interest to television and wanted to examine the possibility of devising a different production technique for children's educational television, one based on the approach he had employed with children in theatrical performances. In pursuing this particular project, he had to familiarize himself with the literature on children's television, which has generated a massive literature in the last few years--Sesame Street research alone becoming almost a field in itself.

In addition to this traditional, instructionally-oriented research, the student had to explore the whole new area of what might be called 'developmental media abilities'. Producers have long assumed that children are only small adults who process audio-visual information from the media in the same way that we do, and a contemporary study by Bradley Greenberg (1976) would suggest that this perception persists. More recent work has established that the child audience is very different from the adult audience in its perceptions of television; moreover, it is not a monolithic audience, but one which changes and increases in abilities as the child grows older and matures (Collins, 1975; Winick and Winick, 1979). The student had also to examine the way that the utilization of technical/stylistic media variables would relate to these age-related media abilities.

All these various findings and theoretical formulations were then factored into the design of the students' production. It was decided that the target audience would be limited to Grades 1 to 3 (approximately ages six to eight years) since it seemed that this range covered a rather homogeneous group in terms of media abilities (although it was expected there would be some differences), while at the same time avoiding the rather dramatic shift in such abilities that seems to occur among age nine or ten (Collins, 1975). The student, by incorporating into the program imagination acitivies that had proved successful in his theatre experience, and by recruiting high school drama students as his talent, hoped to suppress both similarity and wishful identification (Feilitzen and Linné, 1975) in favour of a recognition viewing orientation.

As formulated by Noble (1975), this approach to the media (unlike the case with identification) involves a non-identity loss situation in which the child actively reacts and responds to a character who is like someone he or she knows, such as a relative or neighbour. Locating the subject of interest in the Windsor community (in this case, various forms of transportation) was an attempt to further reinforce this phenomenon. The assumption and hope was that this orientation on the part of the children would facilitate learning, since it would simultaneously engage their interest and keep their attention while also keeping them more consciously focused on the subject at hand.

Once the script for the production had been realized and a twelve-minute program was available to show, arrangements were made with a local elementary school to screen the videotape in the Grade 1, 2, and 3 classrooms and to explore the children's and the teachers' reactions to the program. The children in each class were interviewed as a group after the showing of the videotape, and the discussions were tape-recorded for future analysis; the teachers were given a two-page, ten-item questionnaire which was retrieved at a later date. The production was then assessed on the basis of the analysis of the reactions of these two groups. In this particular instance, the student subsequently used this project as a sort of exploratory study for a thesis media production for his Master's degree requirements.

In this kind of experiential testing of research about production, the findings produced by direct, practical experience make a vivid impression on the students. To use once again the example just cited, the student learned a graphic lesson about developmental media abilities, although there can be no claim made for the generalizability of his findings, given the lack of rigour of his methodology. Nevertheless, for these Grades 1, 2, and 3 students for this particular program, the differences in abilities to comprehend, interpret and derive information from the program within this group with presumably equivalent abilities were most striking. Somewhat like the three bears' porridge, chairs and beds, the program was too complex for the Grade 1's, too simplistic for the Grade 3's, but just right for the Grade 2's. Such a result really impresses upon the student the fact that there are significant differences among children of different ages, differences that must be studied and attended to if a production is to fulfill its objectives, even if the finer age-differentiation in terms of media abilities suggested by these results would have to be subjected to further, more rigorous tests to be accepted as gospel.

On the basis of admittedly rather limited experience (I've had a total of 15 students in three different classes), the approach seems to be fairly effective. Due to the broad scope of the course, however, there is the constant danger that work will either be superficial or sloppily done due to the time pressures. One might argue, however, that such a situation makes the entire exercise much closer to the realities of production. While this contention has validity and a certain appeal to it, a more compelling reason to try to do so much is to give the student a sense of the entirety or totality of the production process and the role which research can play in the planning, design, execution and assessment stages of that process. Students who are really interested in production research and wish to pursue such activities more thoroughly can always do a thesis media production rather than the traditional thesis, as the student whose work was cited earlier did. First one goes for scope, then depth.

While obviously light years away from the kinds of research conducted in the television industry, this course has nevertheless helped me generate some ideas about the role of production research in the television production industry. It has helped to clarify in my mind, the kinds of questions that producers should want to know answers to. From a communications effectiveness point of view, the most important of those questions deal with the process whereby audience members perceive and interpret audio-visual media materials. This would involve elements of viewing behaviour research and mediation research as described earlier, plus an examination of the way in which subject matter interacts with media variables to create meaning. In other words, one would be looking at the way in which viewers derive meaning from the combination of subject matter and formal/stylistic elements of a production.

The pursuit of such answers should probably follow what Berlyne (1974) has referred to as the "analytical approach" in his description of experimental aesthetics. This approach involves studying people's reactions to actual works in the medium under investigation, as opposed to studying reactions to media stimuli which have been especially produced to isolate the effects of a very small number of variables (which approach Berlyne has labelled "synthetic"). In addition, it would be useful to have such studies conducted by research teams, whose backgrounds represented a wide range of disciplinary training and interests, since such an approach would combat the phenomenon of "disciplinary tunnel vision" to which we are all susceptible.

Lest I raise the hackles of many of you who are involved in synthetic studies from a single disciplinary perspective, let me hasten to add that I am not saying that such work is useless or unnecessary. In fact, I would agree with Berlyne that both approaches have merit and that highly controlled synthetic studies will have a great deal to contribute to the body of knowledge about production in the long run. But I believe it was the economist Keynes who said, "In the long run we'll be dead". Producers who are concerned about being effective communicators need information and procedures that they can employ in formative evaluation, especially those which are amenable to use in pre-production phases or which can be utilized at some point before production is completed. In this vein, I think there is also a great need for less rigidity and considerably more imagination in methodological designs and approaches. Unfortunately, at this stage of my own thinking and research I am unable to go beyond the generality of these prescriptions to offer specific suggestions for improvement. Hopefully, however, the collective imagination and insight of researchers concerned with these matters will generate such necessary procedures in the not too distant future.

If I may return to a matter I raised at the beginning of this paper, I would like to conclude with some speculation about the prospects for courses dealing with production research and research about production. In some respects I am not terribly hopeful about the universities as centres for such activities, since universities are in many respects the greatest perpetuators of the two cultures which I decried at the outset. Hidebound and very traditional, most universities also have a great deal of difficulty coming to grips with anything that is not print-oriented. Our department, for example, had considerable difficulty having a 'thesis media production' (which is defined as: a social sciences production equivalent to a research thesis, but may be submitted primarily in non-print form with appropriate scholarly documentation) accepted as a legitimate form of fulfillment of the thesis requirement for the masters degree. And the resistence to media-based studies in some institutions borders on the neanderthal: an acquaintance at another institution told me that when they were proposing the introduction of a film studies program, one top academic administrator resisted, claiming the next new subject requested would be marlin fishing! The current organization of universities on the basis of narrow disciplinary focus is another difficulty one encounters.

I would be totally skeptical about the possibilities for any developments in the universities, except for the fact that the current economic hardships universities are facing have caused a few to demonstrate some imagination in curricular reorganization and development. A small number have demonstrated a willingness to try new emphases and non-traditional topics and approaches in their programs. Whether or not there are any which have both this orientation and the personnel with the expertise and interest to focus on production research remains to be seen.

The other logical area within which such courses might develop is the television industry itself, in either or both of the commercial and educational segments. The problem here, of course, is the fact that the commercial segment is obsessed with questions about attractiveness of programs to audiences (due to the emphasis on profits) and since it is less interested in effectiveness in a communications sense, is not concerned about the more basic, underlying questions of why the audience responds to media materials in the way that they do. The educational segment is more concerned about these basic, underlying questions, but as far as I can discern, has a very narrow focus on, and definition of 'effectiveness'.

The one hope in the television industry is that the new communications technologies which threaten (or perhaps have already undermined) the structure of the traditional television industry will cause television producers and executives to see the need for improved, more thorough, and more imaginative research to give them a better understanding of what it is they are doing. In-house courses in production research would then probably become a common practice.

The best chance for the development of such courses, however, will probably come from the combined efforts of individuals within both the university and television industry communities, from those who believe in this endeavour and are willing to co-operate to arrange joint activities. These arrangements could include both study exchanges (in which TV personnel go to certain universities with expertise in the area and academics are placed in broadcast research organizations) and short courses and workshops in which the two groups can share insights and learn about oversights. While not ideal, such arrangements seem at least to be feasible and could lead to more elaborate courses being developed in the future.

The issue it seems to me keeps coming back to the gulf between the two cultures involved with production research. For those of us who are researchers who are truly concerned about the advancement of the practice of production research, the onus to make the first move to bridge that gulf rests on us. Hopefully, we are willing and able to do it.

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THE IMPACT OF TV UPON ADOLESCENTS IN SOUTH AFRICA

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ABSTRACT

The introduction of television in South Africa on January 5, 1976, created unique research opportunities for the student in Communications. Not only was South Africa the last Western industrialized country to have a television service introduced, but it was also acquired under unique circumstances: the television service was introduced almost immediately on a countrywide basis, which resulted in extremely rapid diffusion or distribution, and from the start care was taken to counteract possible detrimental effects.

To exploit this opportunity to the full, as early as 1971, the Commission of Enquiry into Matters Relating to Television paved the way for timely preparation for research into the effect of television on South African Society. The project, "The Effect of Television on Schoolgoing Young People", was launched by the Institute for Communication Research of the Human Sciences Research Council (HSRC) in conjunction with the four provincial education departments and the South African Broadcasting Corporation (SABC) to gauge the effect of this medium on children. The present paper discusses the project and its main conclusions.

Regarding the short-term effect of television, the data indicates that the South African Broadcasting Corporation's television service has succeeded in selecting its programmes in such a way that no serious detrimental effects were measured. Of course this does not mean that all programmes were totally harmless, but in general, the groups of pupils involved in the studies did not seem to have any serious problems regarding the aspects mentioned.

Furthermore, there were indications that television has an educational or socializing function that not only transfers information to the children, but also (among certain groups of adolescents) makes a positive, albeit small, contribution to their social development.

This means that producers should be sensitive to transmitting what is positive, and should take care that the programmes that they present are normatively geared to the edification of the child.

INTRODUCTION

The introduction of television on January 5, 1976 in South Africa, was unique in the sense that it signalled the final phase of the spread of a major innovation to all the literate, urban, western industrialized nations of the world (Harrison and Ekman, 1976). In South Africa, this very popular mass communication medium was introduced almost immediately on a countrywide basis, which resulted in extremely rapid diffusion. During 1975-76, 0.55 million television licences were issued; in 1976-77, this figure rose to 0.9 million; in 1978-79, 1.15 million and in 1979-80, 1.25 million (SABC, 1981). Other countries in Africa, like Egypt with 610,000 television sets; Nigeria with 90,000 television sets and Kenya with 38,000 television sets, have much lower figures in this regard (Katz and Wedell, 1978). Approximately 3.3 million South Africans view the television transmissions daily, from Monday to Friday (SABC, 1981).

Memories of the days before television are becoming vague for most South Africans and a new generation is growing up not knowing what life without television is like.

The unique research opportunity created by this epoch was duly exploited. The Institute for Communication Research of the Human Sciences Research Council (HSRC) started a series of research projects on the impact of television on the South African society. The most extensive of these projects, The effects of television on schoolgoing young people, was launched in conjunction with the four provincial education departments and the South African Broadcasting Corporation (SABC) to gauge the effect of this medium on children. To obtain comparable data before the introduction of television, research commenced in 1974 (i.e. prior to the introduction of television).

Although research on the effects of television and the child has been in progress for more than three decades, many questions still remain unanswered, partly due to the lack of a pre-exposure basis. In analyzing results from the HSRC's projects, one should also bear in mind that circumstances in South Africa differ considerably from other countries, with regard to matters like the content and nature of our television services. One cannot therefore make direct comparisons between findings in South Africa and those in countries like the United States or Britain. Since 1976, there has been only one channel in operation, with one-half of the evening's viewing in the Afrikaans language, and the other half in English. Furthermore, only 6½% of transmission time is devoted to advertising (SABC, 1981) (no programme interruptions for advertisements). According to Schramm (1964), research undertaken in several countries on the effects of television follows a fixed pattern.

First, the viewing behaviour of children is observed. Questions such as: How long do they watch television? At what times do they watch television? are usually asked. Further questions usually deal with the effect of television on children's free time: how does it affect their homework time, reading time, etc.? Thirdly, questions on children's programme preferences are posed: what programmes do they like? what do they believe? Finally the researcher is faced with the most difficult questions of all, namely what the effect of television is on the child's values, knowledge, social behaviour and mental health (p. 7). It is at this last level that most questions remain unanswered. Schramm's (1964) note that "...all these are immensely complicated matters and far from completely understood" (p. 7) probably still holds today.

In this paper, results of the impact of television on adolescents' homework patterns (Du Preez, 1979a and 1979b), study habits and attitudes (Du Preez, 1980), reading patterns (De Villiers, 1979a), value-orientations (Small, 1979), sporting activities and hobbies (De Villiers, 1979b; De Villiers and Thiele, 1980), vocational interests (De Beer, 1980) and personality (van Vuuren, 1979) will be briefly discussed.

RESEARCH DESIGN

To try to collect as much information as possible, it was decided to use large samples. Table 1 sets out the scope of the samples tested over the years. In 1974 for example, more than 20,000 children from ten to

TABLE 1

The effects of television on school-going young people

Sample

Year	Standard 3 (Grade 5)	Standard 4 (Grade 6)	Standard 5 (Grade 7)	Standard 6 (Grade 8)	Standard 7 (Grade 9)	Standard 8 (Grade 10)	Standard 9 (Grade 11)	Standard 10 (Grade 12)	TOTAL	
1974	$\boxed{7\ 500}$	1 500	1 500	$\boxed{5\ 000}$	1 500	1 500	1 500	1 500	21 500	
1975	1 500	$\boxed{6\ 525}$ 1 500	1 500	1 500	$\boxed{3\ 750}$ 1 500	1 500	1 500	1 500	$\boxed{10\ 275}$ 12 000	22 275
1976	-	-	$\boxed{5\ 700}$ 1 500	-	-	$\boxed{2\ 850}$ 1 500	-	-	$\boxed{8\ 550}$ 3 000	11 550
1977	1 500	1 500	1 500	$\boxed{5\ 000}$ 1 500	1 500	1 500	$\boxed{1\ 875}$ 1 500	1 500	$\boxed{6\ 875}$ 12 000	18 875
1978	-	-	-	-	$\boxed{3\ 750}$ 1 500	-	-	$\boxed{1\ 500}$ 1 500	$\boxed{5\ 250}$ 3 000	8 250
1979	1 500	1 500	1 500	1 500	1 500	$\boxed{2\ 850}$ 1 500	1 500	1 500	$\boxed{2\ 850}$ 12 000	14 850
1980	-	-	-	-	-	-	$\boxed{1\ 875}$ 1 500	-	$\boxed{1\ 875}$ 1 500	3 375
1981	-	-	-	-	-	-	-	$\boxed{1\ 500}$ 1 500	$\boxed{1\ 500}$ 1 500	3 000

☐ = The same pupils retested every year.

eighteen years old, were tested. Fourteen different questionnaires and psychometric instruments were used (Table 2). The tests were conducted in schools by teachers, trained by school psychologists.*

Although all the data are of the survey-type, it is possible to describe the project as a field experiment, in the sense that pre- and post-television exposure data were accumulated. The general research design initially used is the test-retest method with control. The same pupils tested before the introduction of television were used in follow-up studies after the introduction of television. These pupils were divided into television viewers (or heavy viewers) and non-television viewers (or light-viewers) on the basis of their television viewing habits. These two groups were then put on par, by means of matching in some cases, and statistically by using analysis of co-variance methods in other cases, with regard to relevant biographical and other variables. It was therefore possible to compose two comparable pre-television groups. In this way, a minimum of four comparable groups were obtained, namely two pre-television groups and two post-television groups. Schematically the design is set out in Figure 1.

RESULTS

Most of the results reflected in this paper concern short term trends, when it was still possible to identify non-viewers in areas where the television network has not yet established transmitters.

Patterns of Use

As in the rest of the world, television is viewed very enthusiastically in South Africa. In 1976, more than 20% of a group of Standard B (grade 10) pupils viewed television more than four hours per day. Fifty-eight percent of the said group viewed more than four hours per day during weekends. Boys tended to view more than girls. Two years later, in Standard 10 (grade 12) these pupils still viewed an average of fifteen hours per week during school terms (Du Preez, 1980; De Beer, 1980). Television hours are from 5:30 pm to approximately 11 pm during week days.

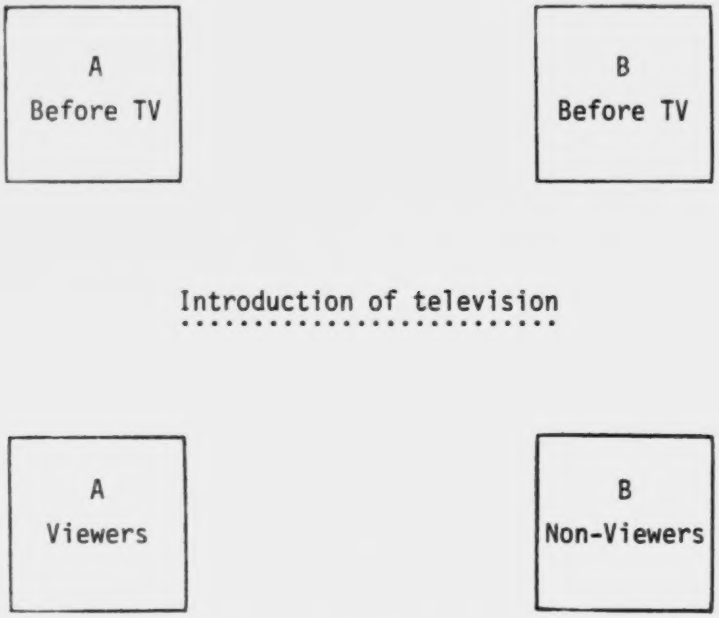
*For a discussion of the method of data collection, see van Vuuren, 1979.

TABLE 2

The effects of television on school-going young people

Test programme

Standard 3-4 (Grades 5-6)	Standard 5 (Grade 7)	Standard 6-7 (Grades 8-9)	Standard 8-10 (Grades 10-12)
•Biographical Questionnaire •Opinion Survey •Time Utilization Questionnaire •Children's Personality Questionnaire (CPQ) •Television Questionnaire •Questionnaire to class teacher (Marks, IQ)	•Biographical Questionnaire •Opinion Survey •Time Utilization Questionnaire •Children's Personality Questionnaire (CPQ) •General test in the second language •Group Personality Projection Test (GPPT) •Television Questionnaire •Questionnaire to class teacher (Marks, IQ)	•Biographical Questionnaire •Opinion Survey •Time Utilization Questionnaire •Attitude Scale •Situation Questionnaire •Relations Questionnaire (PHSF) •High School Personality Questionnaire (HSPQ) •General test in the second language •Group Personality Projection Test (GPPT) •Survey of Study Habits and Attitudes (SSHA) •Television Questionnaire •Questionnaire to class teacher (Marks, IQ, Behaviour)	•Biographical Questionnaire •Opinion Survey •Time Utilization Questionnaire •Attitude Scale •Situation Questionnaire •Relations Questionnaire (PHSF) •High School Personality Questionnaire (HSPQ) •19 Field Interest Battery •Scholastic Proficiency Battery (SBB) •Group Personality Projection Test (GPPT) •Survey of Study Habits and Attitudes (SSHA) •Television Questionnaire •Questionnaire to class teacher (Marks, IQ, Behaviour)


A
Before TV
B
Before TV
Introduction of television
A
Viewers
B
Non-Viewers

(In some studies (cf. De Beer, 1980) a three-group design was used, and at the present time profile analyses are being done on some of the longitudinal data.)

FIGURE 1 Test-retest with control (see Campbell & Stanley, 1966, p.47)

Homework Patterns

The slight decrease in the amount of time children spend on their homework found by Furu (1962) in Japan, Schramm, Lyle and Parker (1961) in the USA and Maletzke (1959) in Germany, is also the trend in South Africa: with regard to English-speaking Standard 5 (grade 7) pupils, the HSRC found that girls spent less time during the week (Mondays to Thursdays), but boys more time over weekends on their homework than was the case before the introduction of television. Afrikaans- and English-speaking Standard 8 (grade 10) boys on the other hand spent less time on their homework during the week (Mondays to Thursdays) because of television (Du Preez, 1979a, b; Du Preez, 1980).

Study Habits and Attitudes

Du Preez (1980) researched the effect of television on the study habits and attitudes of Standard 8 (grade 10) pupils, and used a South African version of Brown and Holtzman's (1974) study habits and attitudes questionnaire. It was found that television viewer's acceptance of educational ideals, aims, practices and requirements was affected negatively. Their attitude towards the teacher's conduct in the classroom was also negatively affected, and it seemed that this phenomenon presented itself particularly in gifted pupils (those with an above-average IQ) as well as those who performed well at school.

Reading Patterns

During the 1950's and 1960's, research indicated that a general trend to read less than before the introduction of television was the order of the day (cf. Maccoby, 1951; Witty and Kinsela, 1959; Furu, 1962). Recent concern (Tannenbaum, 1980) about a deadline of reading skills in students tends to emphasize the importance of this topic.

Data collected by the Institute for Communication Research at the HSRC indicate the following (cf. De Villiers, 1979a): It was found that since the introduction of television, English-speaking Standard 5 (grade 7) boys read fewer photo story booklets per week, while the extent to which they read books, newspapers and magazines does not appear to have been affected. Both English- and Afrikaans-speaking Standard 5 girls appeared to have read fewer books since the introduction of television. However, more of them indicated that they now read a Sunday newspaper, than was the case before the introduction of television. With regard to preference for reading certain subjects, television does not seem on the whole to have affected the preferences of the English-speaking Standard 5 boys. Their preference for Bible stories has, however, declined. Among the English-speaking girls, television seems to have had a stimulating effect on their preferences for Bible stories, war and adventure stories, detective stories/murder stories/Westerns, and literature on hobbies, while it has caused a decline in their preference for poetry, plays and historical stories.

Although it would appear that the changes that have taken place in the reading patterns of the pupils concerned are not drastic in the short-term, careful study of the long-term effects should be done.

Sporting Activities and Hobbies

In South Africa sport constitutes an important part of the child's activities after school. Results indicate that television caused fewer Standard 8 (grade 10) boys to take part in rugby and athletics than before, while it had a stimulating effect on their participation in soccer and cricket. It was also found that more girls from this group took part in hockey and fewer in netball. Participation in other kinds of sports, e.g. swimming, wrestling, judo and karate, jukskei, baseball and gymnastics does not seem to have been affected; not in the short term at any rate (De Villiers, 1979b). Television had a stimulating effect on the time boys in Standard 8 (grade 10) spent on hobbies, but had no effect on the girls' time spent on hobbies (De Villiers and Thiele, 1980).

Vocational Interests

Except for the work of Gerbner and his associates on children's view of the world (Gerbner, et al., 1978, 1979), little attention had been devoted to the effect of television on children's vocational interests. In an interesting study, De Beer (1980) found that South African television probably stimulated Standard 10 (grade 12) pupils' interests in social work. Considering the fact that a fair amount of viewing time is devoted to drama (in 1978, 24%; in 1979, 29% - (SABC, 1981), the contents of television programmes probably contributed to these changes. Content analyses of television dramas are being done at this moment to try to link the effect results with the content of television programmes. Although a fair proportion of television dramas are produced locally, international production and especially American productions such as Kojak and Dallas are screened in South Africa and have been very popular.

Value Orientations

One may indeed ask if television can really affect the inner life of a person - his relationship to others and his expectations and value-orientations. According to Schramm (1964) the impact of television on these aspects is the most difficult to determine.

In a study by Small (1979) the impact of television on the value-orientations (authority, family relations, religion, and future-directedness) of Afrikaans-speaking Standard 8 (grade 10) adolescents was investigated. The indications are that the views of the adolescents on authority seem to have been affected positively. The boys' views on family relationships and the girls' views on religion were negatively affected. In a different study indications were found that those adolescents who watched television did not feel so strongly that the behaviour conformed with the accepted social norms of society (Van Zyl, 1979).

Personality

As in the HSRC's study on the effect of television on relationships, Standard 8 pupils (in this case only Afrikaans-speaking ones) were used in a further study to establish whether television had caused any changes in their personality structure (van Vuuren, 1979). These adolescents, as in the case of all the above findings, were tested in 1974 (before the introduction of television) and in 1976 (after the introduction of television). A control group, who had no access to television, was matched with the experimental group and results of the same year and the same measuring instrument were examined. The High School Personality Questionnaire (HSPQ) of Cattell (see Cattell, 1973), standardized by the Institute for Psychological and Psychometric Research of the HSRC, was used.

The results indicated that the adolescent television viewers were inclined to be more cordial in their interpersonal relationships, enjoyed social participation more, being the type of person who prefers group activity and who is more energetic. These adolescents were also more successful in their formal relationships and showed a greater need for social interaction than non-television viewers after the introduction of television (no differences were found in the two matched groups scores in 1974, that is, before the introduction of television). There seemed to be a tendency among the early adolescent television viewers to 'let go' emotionally, which might have encouraged easier social interaction. As in most effect study results, changes found in average scores were small, although statistically significant.

The recent resurgence in the field of mass communication research, and the moving away from the "law of minimal effects" (Roberts and Bachen, 1981) compel the social scientist to try to explain the abovementioned effects of television. As McQuail (1976) stated: ".... in the long run, it is more useful to know why effects occur than to know what effects occured ...." (in Brown, 1976, p. 346).

Most of the results discussed can to a greater or lesser degree be ascribed to the newness effect, the novelty of television that created... topics of conversation and social commitment...(Van Feilitzen, in Brown, 1976, p. 103). Of course, the impact of television on homework patterns, some aspects of reading, sporting activities and hobbies could also be related to a shift in time-utilization patterns, but it would appear that the content of television programmes, especially drama, played some role in the patterns of effects that has emerged so far. The question of identification with certain programme characters, and the cathartic emotional release (cf. the experiments of Feshback and Singer, 1971), could be possible explanations. Therefore, the dynamics of social interaction as a result of identifying with television characters seem to constitute an interesting topic for investigation. In this regard the imitation of social behaviour depicted on television and copying of social relationships shown on television by adolescents is another possible approach to explain the data. As Howitt and Cumberbatch have noted, "...It might be observed that there are plenty of instances in which the clothes and mannerisms of an admired media personality are adopted ...." (Brown, 1976, p. 171). Adolescents' use of the contents of television programmes as models in the developmental process of learning social practices and techniques would be worthwhile examining. The methodological limitations of the present studies however, compel the researcher to be cautious in his or her interpretations.

CONCLUSIONS

The current high degree of interest in empirically verifying television's impact of individuals and society (Comstock et al., 1978: XIV) is probably as true for the South African situation as it is for the rest of the world. The present study by the Institute for Communication Research is an attempt to make use of the unique situation of the simultaneous introduction of television on a countrywide basis. The preliminary results indicate that on the short term, television had a negative effect on inter alia adolescents' homework, study habits and attitudes and some areas of reading, but more positive effects on interpersonal relationships and mental health. Interesting changes in adolescents' sporting activities, and vocational interests were also noted. Indications that television does indeed influence the more difficult to measure, fourth level, identified by Schramm (1964) have therefore perhaps been found. To verify these findings, research on the long term effect, by means of studies with longitudinal designs, is being undertaken at the moment.

> The introduction of television in the Republic of South Africa has opened early windows for many children. It has created new fields for research for the student in communications. It has emphasized a new responsibility for involvement for both television producers and television researchers.

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WHY TEENAGERS WATCH TELEVISION: IMPLICATIONS FOR ETV PRODUCTION

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ABSTRACT

Few media producers have the opportunity to plan their production on the basis of systematic research. In long-term series planning, however, they should not hesitate to collect even quite simple data in order to assess their audience's tastes. The present paper outlines research into teenage viewing preferences undertaken prior to production of a series for CITY-TV, Toronto. It summarizes the information generated, and illustrates the uses of a simple and informative research approach at the production level.

INTRODUCTION

During 1972/73, the co-author of this paper (G.G.) was employed as a writer/producer for CITY-TV in Toronto, Canada. His job was to produce weekly programs (on unrelated themes) for teenage audiences. These programs were segments of a three-hour news magazine production called "The City Show". The two major goals of the segments were: 1) to attract as large a teenage audience as possible; and 2) whenever possible to create productions that promoted a 'socially responsible' attitude toward gender roles, interpersonal relationships, and violence and aggression. In order to plan an effective series, it was clearly desirable to have a working knowledge of the viewing patterns and motivations of this particular audience.

A review of the literature revealed three facts: 1) there existed a paucity of applicable research in relation to teenage viewing; 2) it was difficult to identify unequivocally one motivational factor as being more important to the teenage audience than another; 3) many findings, theories and studies were idiosyncratic to specific samples; 4) research often failed to isolate teenage samples from adults or children; and 5) research methods and findings were non-generalizable.

The research that was available pinpointed the following teenage viewing characteristics: 1) teenagers do not like complications in their lives or complex T.V. characters; 2) they tend to be unilaterally motivated; 3) they enjoy programs that encapsulate issues or events (i.e., put things into 'tidy packages'); 4) they watch T.V. to reduce anxiety and avoid responsibility (e.g., homework, chores, parents, etc.); and 5) many teenagers (like children) tend to live vicariously through T.V. characters (Lazarsfeld, 1972). With these generalities in mind, a study was designed to investigate the general viewing tastes of our highly specific target audience, the teenagers of Toronto.

THE SURVEY

Method

An action-research strategy was used. Feedback from the respondents was developmentally and sequentially built into the ensuing steps of the research process. The study had three steps, each having a somewhat different research design and sample.

Step 1. Two different class levels in two high schools in Metropolitan Toronto were sampled. Students were randomly selected from class registers of Grades 10 and 12 (ages 13-18) in these schools. A total of 113 Grade 10 students and 91 Grade 12 students were asked two open-ended questions: 1) "Generate a list of as many different reasons you can think of why teenagers watch television," 2) "List the shows teenagers watch." The wording of these questions was such that the self-report data would yield responses about the respondents themselves as well as other tennagers.

Step 2. Five different high schools (not used in Step 1) in five separate geographic areas of Metropolitan Toronto were next randomly sampled. Two hundred and sixty-three students were selected from Grades 9 to 13 (ages 12-19), and a structured questionnaire was administered to each of them. The questionnaire comprised three sections which included: 1) Background and Demographic Variables, 2) Reasons for Watching Television, and 3) a report of shows that were watched. The "Reasons for Watching Television" portion of the questionnaire was a synthesized list of the reasons suggested in Step 1.

Step 3. Five months and 14 productions later, 1,819 teenagers were randomly selected from four different high schools not studied previously. These students were given a viewing inventory which asked them to report and rank the shows they had viewed during one specific week. The completed and returned questionnaires for this phase of the study totalled 1,231 (or 68%).

Results

The results of the survey are presented according to the sequence of steps outlined in the Method section above.

Step 1. The initial sample of students (n_1 = 113) were selected from Grades 10 and 12 generated two lists of data. The first list referred to the reasons teenagers watch television. Table 1 lists the seven most frequently cited reasons, and their levels of endorsement. Each of the motives noted was endorsed by at least 50% of the sample. (N.B. Four teenagers in the sample did not endorse any of these reasons and were treated as missing cases.)

TABLE 1

The reasons a sample of teenagers watch television (ranked in descending order)

Viewing Motives	Frequency of endorsement (n_1 = 113)	Relative % of endorsement
1. Certain shows interest them	104	92.0
2. T.V. entertains them	98	86.7
3. T.V. is relaxing	86	76.1
4. T.V. helps tune-out other concerns	76	67.3
5. T.V. is a way to pass the time	76	67.3
6. T.V. teaches them things	72	63.7
7. T.V. provides them with a convenient way of spending time with their friends and families	61	53.9

The same sample (n_1 = 113) was also asked to list the types of shows that teenagers watch. The seven most frequently cited categories are noted in Table 2. 'Comedy' shows are seen to be the most popular category on this basis (endorsed by 85%) and 'News/Information' shows the least (27%).

TABLE 2

The types of television shows watched by a sample of teenagers (ranked in descending order)

Type of Television Show	Frequency of endorsement (n_1 = 113)	Relative % of endorsement
1. Comedy	96	84.9
2. Drama/Adventure	89	78.7
3. Sports	72	63.7
4. Daytime Serials	70	61.9
5. Variety Shows	49	43.3
6. Games Shows	41	36.2
7. News/Information	31	27.4

As a test of validity of these data, the same sample was asked to specify their five favourite television programs (the actual names of the shows). After examining these preferences and rank ordering them as above, only 'Variety Shows' and 'Game Shows' were reversed in the ranking.

Step 2. In order to determine whether the data were representative of larger teenage populations, as well as of wider age ranges, these students were asked to attach a degree of importance to the seven motives for viewing cited in Table 1. A four-point Likert-type scale was used ("3 = Very Important Reason", "0 = Not an Important Reason").

Once again, over 50% of this sample (n_2 = 263) endorsed all of the motives listed, this time by indicating them important in some degree. The rank ordering of motives on this measure corresponds to that of Table 1, the only notable difference being that the Item "Certain shows interest me" was ranked third for this sample instead of first.

The sample (n_2 = 263) was next asked to indicate the type of T.V. shows that teenagers watched. Apart from "News/Information" shows, over 50% of these teenagers indicated that they watched every type of TV show noted. The rank ordering of show types was virtually identical to that indicated in the first, smaller sample (Table 2), the only difference being that "Daytime Serials" was ranked sixth for this sample instead of fourth.

When these data were broken down by age, sex and geographic location, the only significant findings were that men preferred sports shows more so than women, and women ranked daytime serials higher than men. The viewing motives cited did not significantly differ between males and females, or according to age. Where the students lived in Metro Toronto made no essential difference to their viewing motives either. These findings are consistent with those of a recent (1981) survey of teenagers and television conducted by the Canadian Broadcasting Corporation (CBC), and with our previous findings.

Step 3. The third sample (n_3 = 1,231) indicated viewing tastes consistent with our earlier findings in Steps 1 & 2. Of the television shows most commonly viewed in a given week, six were comedy, four were drama/adventure, and two were sports. During that same week, our own production captured 28% of the viewing audience, which was a remarkably high proportion considering there were six available channel alternatives. We would be remiss, however, not to mention that this particular show was about sex and was heavily advertised, more so than usual.

We do believe, however, that the series of programmes owed a great amount of success to the ways in which we were able to apply the research findings of Steps 1 and 2 in production design. As Step 3 confirmed, we were evidently dealing with a very stable set of viewing tastes, and one which still pertains nine years later. In the next section we discuss the applications of our research at the production level.

DISCUSSION

Formative Research Applications

As previously noted, the early findings of the research were incorporated into the programming format for the shows subsequently produced. As a result, of the 21 segments that were produced: 1) sixteen were advertised as "A humorous look at..." or..."A dramatic look at (e.g.) why students cheat at school"; 2) the three sports shows produced in this time period all had a strong element of comedy in them; 3) no variety or game shows were produced; 4) only two news/information shows were produced; and 5) no serial formats were used.

Because news/information programs were low in the preference ranking, and the production was packaged as a segment of a larger news/information program, the station manager agreed to advertise these segments separately in the programme guide, and to schedule the segments at the same time each week. Thus, teenagers could tune in regularly without having to watch other parts of the larger news/information show. The need for this provision was later confirmed by the viewing habits recorded in Step 3 of the study.

A content analysis of the viewing inventory of Step 3 (vis à vis the portrayed characters in each show rated) provided another interesting finding. Teenagers, young or old, liked to watch other teenagers, implying a sense of identification with the shows. As a result of this finding, primarily teenagers were cast for all of the subsequent programs that the co-author produced.

It should be remembered that this research was conducted sometime before the more sophisticated formative research procedures of the Children's Television Workshop, New York, had yielded similar findings (Mielke, 1981). It also preceded the quite elaborate 'uses and gratifications' research of for instance; Blumler and Katz (1974) and Lometti _et_ _al_. (1977). If faced with producing a similar series today, we would still be inclined to mount our own relatively simple survey in this way, for no one else's research can necessarily predict the best production strategies for a new series, on a new set of topics, and for an audience never previously examined. Even simple survey procedures such as we have reported above can have a decided impact on programme planning; and we report this study partly to indicate that formative research need never be complex or sophisticated if it is to be useful in practice.

There are even distinct drawbacks to complex and sophisticated research procedures from the applied point of view. In the commercial context, research must be geared toward providing quick feedback, simple descriptive statistics, and an effective blueprint for the bridge between people's expressed TV needs and the production strategies required to meet them. The working producer has neither the time, resources nor background to apply most complex research procedures, and must be encouraged to design his own rough-and-ready techniques whenever so tempted. In any case, as so many of the conventional academic investigations of media impact prove, few researchers have a more practical sense of the right questions to ask than the producer does.

Implications for General ETV Programming

In order for any action-oriented media research model to work effectively, it is clear that the relationship between the audience's tastes and programming techniques must be held clearly to the fore. It is also clear that the producer must have a degree of autonomy in order to enjoy applying the fruits of his research at the production level. Thus, the freedom enjoyed by the producer/co-author of the present paper, and the administrative support of his station manager, were essential to the success of the research and production process. Producers/writers/directors should obviously ensure that these administrative supports are available before they choose to conduct research of this type.

Many television shows, particularly documentaries that endeavour to teach adolescent issues related to life skills, personal responsibility, ethics and values, may not be planned or structured as effectively as possible from the attitudinal or behavioural point of view. This is simply because most producers/writers do not do any research about their audiences or assess the impact of their actual program content. If educational TV programming for teenagers is to have any guaranteed impact in areas such as venereal disease, unwanted pregnancies, racism, juvenile deliquency, family relationships, alcoholism and drug abuse, suicide, and sex education, producers and writers should apply programming formulae such as outlined in this paper. They should 1) cast or feature teenagers as actors/actresses and/or narrators; 2) keep the productions uncomplicated and with simple themes; 3) use humour as much as possible; and 4) entertain the audience as much as inform them.

Interestingly, many educational productions in these critical areas of human behaviour seem to use programming formats that are diametrically opposed to those suggested here. The authors therefore maintain that for the most part, the medium of educational television is not nearly as powerful and influential, with regard to the teenage audience, as it could be. When one realizes that television is powerful enough to determine who wins or loses a political election, it comes as a shock to realize how relatively weak the medium has so far proved in curbing or shaping teenage attitudes towards society. We would do well, therefore, to rethink our uses of this powerful medium in order that we may present it to the teenage world more effectively.

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THE TV ONTARIO ACADEMY: THE USE OF TELEVISION BROADCASTING AND COMPUTER-MANAGED LEARNING FOR ADULTS

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ABSTRACT

In January 1980, TV Ontario introduced a new concept in adult learning, the TV Ontario Academy. It consists of a combination of high broadcast-quality television programming, a computer-managed learning system, and specially designed courseware aimed at affording TV Ontario viewers the opportunity of embarking upon self-directed learning projects on subjects related to the television series.

Viewers who express an interest in undertaking this type of learning with the help of TV Ontario are provided with learning guidance and advice. They are helped in formulating their learning goals and interests. One of the main features of this approach is that the learners are given the opportunity to respond to frequent and systematic sets of specially designed questions and exercises aimed at providing further clarification of concepts, intellectual stimulation, as well as an opportunity for self-evaluation. Thanks to the use of the CML system, the learners receive individualized feedback to their responses. This feedback can take into account not only their choice of answer and outcome of the exercise, but also their learning goals and interests, their educational background, occupation, the geographic areas they are living in, etc. The duration of the learning projects so far initiated within the framework of the TV Ontario Academy ranges from 8 to 14 weeks.

The three projects so far introduced are: a 14-week Health and Environment Academy, an eight-week Music of Man Academy, and a 12-week Parent's Academy. A fourth Academy on Computing for Teachers is at present being prepared.

In January 1980, TV Ontario began to use computer-managed learning (CML) in support of television broadcasting. The three projects which have been carried out since brought results which are very promising for the future of this type of innovation.

But what is TV Ontario? Why is it interested in CML? What were these experiments all about?

TV ONTARIO

TV Ontario is a television network operated by the Ontario Educational Communications Authority (OECA). The network consists of nine television stations (three more at present under construction) which can reach approximately 85 per cent of the over eight million people living in the Province. The normal TV Ontario broadcast day is about 16 hours. Its programmes are also transmitted through many cable channels across the Province and are available on videotape to all educational institutions, libraries, and other nonprofit community organizations for a nominal fee.

The OECA is a broadcasting organization and not an educational institution per se. While it makes a major contribution to formal education by supporting the teaching programmes of schools, colleges and universities of the Province, its educational services to the general public are of a rather informal nature. TV Ontario does not offer any credit courses on its own behalf; it does not formally evaluate the learning progress of its viewers, nor does it offer any official recognition of achievement for participating in a learning project. It does, however, offer a variety of meaningful learning opportunities which help many individuals to broaden their intellectual and cultural horizons and acquire knowledge and skills in various subject areas.

A NEW CONCEPT IN ADULT LEARNING

Studies carried out by us in recent years on the learning needs and interests of the general public indicate a growing demand among adults for learning in subject areas and in teaching situations which are not usually available through formal educational institutions. Distance from educational institutions, inability to leave home, lack of time, dislike or fear of formal schedules and exams, fear of failure, etc., are among the reasons why a considerable proportion of those who feel a need for learning do not participate in any organized learning activity. TV Ontario felt, therefore, that new ideas and efforts should be tried out to meet the needs of this significant segment of the population.

We knew that with television broadcasting, we could reach a considerable number of people. We also knew that high quality television programming and accompanying materials, such as booklets, audio tapes, learning kits, etc., could be a rich and attractive learning resource. However, the provision of learning resources is only a part of an effective teaching/learning process. We were looking for means which would enable us - without employing a regular staff of teachers, tutors, or instructors, like other educational institutions - to reach larger numbers of learners on a personal basis. We wanted to find economic and efficient ways of maintaining continous contact with learners throughout the duration of a television-based learning project for the purpose of counselling, encouraging, motivating, correcting, informing, etc.

THE TELEVISION PROGRAMMES

The basic component of a TV Ontario Academy is a carefully selected series of television programmes which covers a well-defined body of knowledge. As the clients of a TV Ontario Academy are individual viewers in their homes, who might not have undertaken the learning project on their own, the television series has to be an attractive production of professional quality. The Health and Environment Academy is based on a series produced by TV Ontario in cooperation with the inter-university Education Council on Health and the Environment. The 14 half-hour documentaries focus on health concerns ranging from processed food to species survival. The issues are discussed from an environmental and interactional perspective, which stresses the increasing demands that modern technology has placed on the human body and the role lay people play in health matters. The Music of Man Academy is based on eight one-hour programmes produced by the Canadian Broadcasting Corporation in association with the OECA and written and narrated by Yehundi Menuhin. The programmes provide a unique panorama of the world of sound, and present the musical traditions of five continents with performances by many of the world's distinguished artists. The Parent's Academy programmes have been selected from several series produced by TV Ontario in the last two years and deal with the development of normal and atypical children.

The television series serves as the initial stimulus for learning. When the plans to broadcast the series are announced, we are making the public aware that for many people this might be a good opportunity to engage in a learning experience from which they could gain considerably more than from just watching a television programme.

OTHER MAJOR COMPONENTS

A Learner's Guide

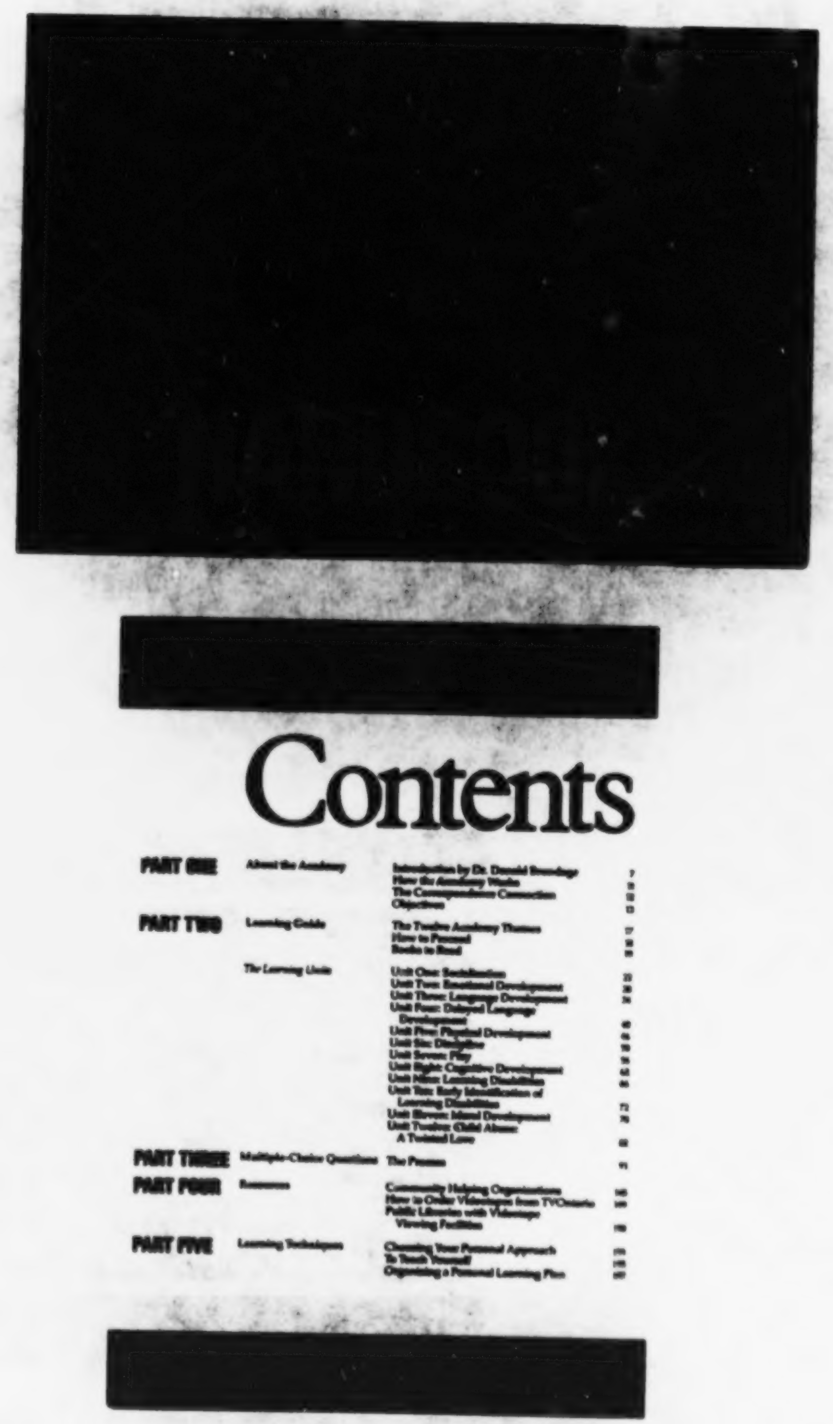
The guide usually describes the overall educational goal of the series, as well as the educational objectives of each particular unit of learning (a learning unit is a portion of learning activities built around each of the television programmes which, as a rule, are broadcast at weekly intervals). The guide also contains the date and time of the broadcasts and their repeats, calendars of related events which will take place in various parts of the Province, and advice on other activities, like field trips, exercises, etc. The guide gives a list of public libraries or other institutions which hold appropriate reading materials and where, in many cases, the videotapes of the series are available for individual viewing (Figures 1 and 2).

Reading Materials

Specially written essays of between 2 and 15 pages accompany each programme. In addition, mainly for the more advanced participants, lists of recommended readings are developed for the series as a whole as well as for the particular learning units.

The Multiple-Choice Questions

Set of multiple-choice questions are developed for each learning unit. The function of these questions is, in our case, not so much to evaluate the learner's progress as to serve as another learning resource and to cause active interchange between the Academy and its participants. The questions are designed to involve the participants intellectually, to



Contents

PART ONE About the Academy
Introduction by Dr. Donald Brundage
How the Academy Works
The Correspondence Connection
Objectives

PART TWO Learning Guide
The Twelve Academy Themes
How to Proceed
Books to Read

The Learning Units
Unit One: Socialization
Unit Two: Emotional Development
Unit Three: Language Development
Unit Four: Delayed Language Development
Unit Five: Physical Development
Unit Six: Discipline
Unit Seven: Play
Unit Eight: Cognitive Development
Unit Nine: Learning Disabilities
Unit Ten: Early Identification of Learning Disabilities
Unit Eleven: Moral Development
Unit Twelve: Child Abuse: A Twisted Love

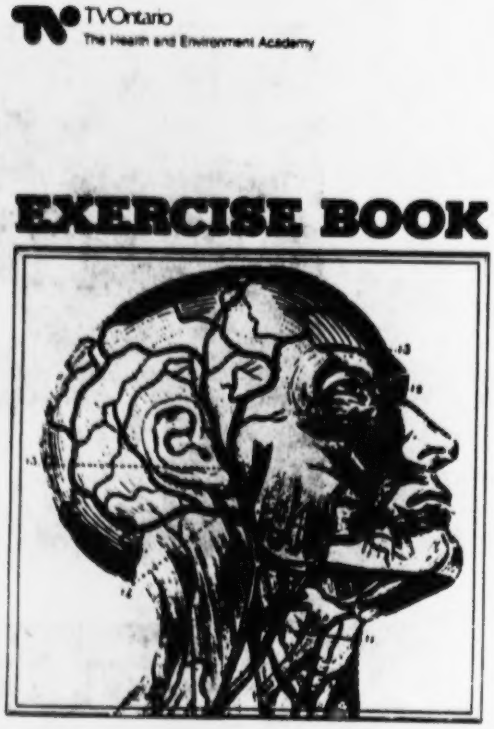
PART THREE Multiple-Choice Questions
The Process

PART FOUR Resources
Community Helping Organizations
How to Order Videotapes from TVOntario
Public Libraries with Videotape Viewing Facilities

PART FIVE Learning Techniques
Choosing Your Personal Approach To Teach Yourself
Organizing a Personal Learning Plan

FIGURE 1 Learner's guide accompanying TV Ontario's Parents' Academy (title pages)

BEST COPY AVAILABLE



TVOntario
The Health and Environment Academy

EXERCISE BOOK

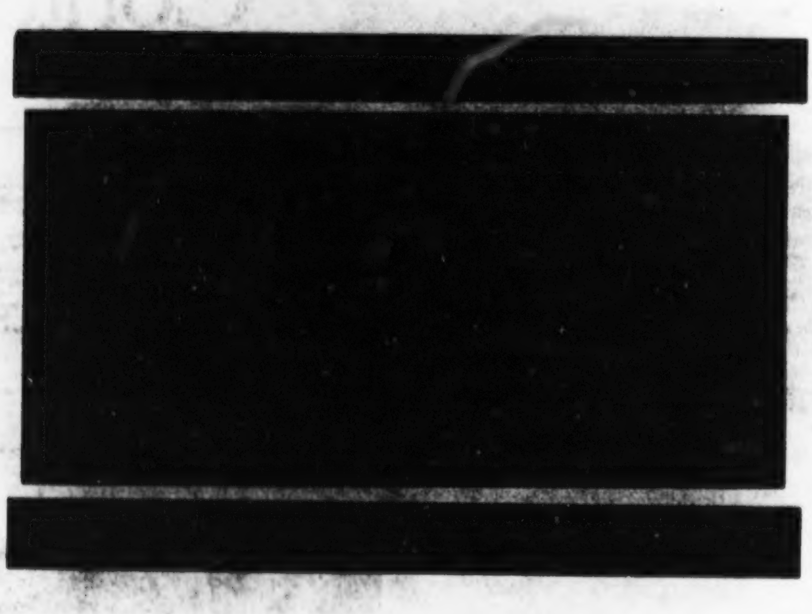


FIGURE 2 Materials accompanying TV Ontario's Health & Environment and Music of Man Academies (title pages)

stimulate their curiosity and to sustain their interest.

The Computerized System of Learning Management

The CML system enables us to write individualized letters to participants in response to the answers which they send in to the multiple-choice questions. We use the letters to clarify, when necessary, particular concepts, to stimulate further inquiry, to advise on related activities, and to help participants contact each other for possible group meetings and discussions.

The CML system used by the Academy enables each letter to be individualized to a considerable degree. Each participant can receive from the Academy comments and suggestions which will take into account not only his or her choice of answers but also the personal learning goals and interests, as stated in the registration forms filled out at enrolment, the educational background of the participant, his or her occupation, geographic location, etc. These individualized letters to aprticipants are one of the main features of the Academy providing for personalized contact with each participant throughout the project.

Newsletters

These provide an important means of exchanging experience and observations among Academy participants.

How the Academy is Prepared

When an Academy is based on an already existing series of television programmes, its preparation requires the cooperation of subject matter specialists, educational designers, and computer programmers. Should an Academy entail the production of a new television component, the television producer also becomes a prominent member of the Academy team.

First the subject matter specialist and the educational designer have to determine the major objectives and concepts of the course, and to prepare the course materials. The subject matter specialists are selected from among university professors and experience practitioners and time is spent familiarizing them with the educational design of the Academy and the methodologies used for the development of the course materials. The educational design of the Academy is supervised by TV Ontario staff members. The computer programmer is responsible for programming the computer to produce the individualized letters and for maintaining the 'registry' of the Academy.

The Academy is 'managed' by a system of computer programmes known as RSVP (Response System with Variable Prescriptions) initially developed by the Miami-Dade Community College in Miami, Florida, USA. The software is capable of carrying out several important functions: it maintains a record of each learner such as name, address, telephone number; personal attributes, such as sex, occupation, interests, goals; the learner's responses to the multiple-choice questions; and various other pieces of administrative information. The system also allows for printing the individualized letters according to demands given by the Academy staff.

The computer programming used at present by TV Ontario requires an IBM 360 or 370 computer, or any compatible system. However, the Miami-Dade Community College, TV Ontario and several other institutions and organization are undertaking a co-operative venture for the development of a microcomputer-based instructional system which would allow the use of microcomputers for similar modes of computer-managed learning.

HIGHLIGHTS OF EVALUATION FINDINGS

The findings of an evaluation of The Health and Environment Academy and The Music of Man Academy provide interesting information about the motives of people who decided to participate in the Academies, as well as about their perception of the learning process. Here are some highlights of the findings:

- The geographic distribution of the participants very closely reflected the actual distribution of population throughout the Province.

- Among reasons for enrolling in the Academies, over 40 per cent of the participants indicated that the idea of a television-based learning experience appealed to them.

- When asked about the reason for participating in a television-based learning activity rather than any other type of course, the largest number of respondents chose the replies 'It is a convenient way to learn' and 'I wanted to try a course using television".

- Participants found the registration process for the Academies very simple.

- Most of the participants heard about the Academies from promotion spots on the TV Ontario network.

- The overwhelming majority, around 90 percent of respondents, enjoyed receiving the computer-generated letters, considering that the comments were helpful, that they related directly to their needs and interests and that they stimulated reflection and discussion of the television programmes. The majority was satisfied with the language and the writing of the letters.

- When asked to evaluate each of the components of the Academies, nearly 90 percent of the respondents considered the main components - the television programmes, the learning guide, the sets of questions and the computer-generated responses - to be 'very useful' or 'somewhat useful'.

SOME CONCLUSIONS

The first two Academies were introduced as a strictly experimental venture. The fact that, despite the newness of the proposition, the relatively short preparation period, and the minimal promotion effort, they attracted over 700 individuals from across the Province, as paying participants leads us to believe, that this mode of informal learning has a considerable potential. The Parent's Academy, introduced in January 1981, has attracted 2,000 individuals from across the Province. The type of contact and rapport which established itself between the Academies and a substantial proportion of the participants strongly confirms the viability of the project and its method.

One of the most important results has been the development of new types of course materials. This new educational design encourages a systematic effort by the learner to be spread over a number of weeks, it provides guidance and pacing, it feeds and enriches the learning process, and most importantly, it gives the lonely learner - and most home learners are usually lonely - a desirable channel for expressing himself. We now have strong evidence that a substantial proportion of the Academy participants understand the opportunities which the system provides, and that they take full advantage of them. The numerous comments, even those criticizing certain aspects of the Academies, express acceptance and appreciation.

The Academies are a significant achievement in two important respects. Firstly, they are successful examples of the educational and instructional capabilities of television broadcasting: in all the Academies the broadcasts were the main stimulus for the learning projects and formed a significant part of the resource material. Secondly, the Academies are a form of truly interactive television and as such prove that interaction does not always need immediacy.

Our future plans include an Academy on computing, designed in principle for teachers of elementary and secondary schools, which would probably also attract a considerable number of people from among the general public. Also under consideration are Academy projects on moral choices in contemporary society, on the modern Middle East, and on technology for the non-technologies.

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Further details of the evaluation studies reported in the article may be sought from the authors.

EVALUATION OF TELEVISION FORMATS AND VIEWING BEHAVIOUR

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ABSTRACT

Evaluations of television formats were studied in relation to viewing behaviours and attitudes towards this medium. In addition, the relationships between evaluations of television formats and audience charactersitics were examined empirically. The study was conducted in the spring of 1981 and the sample is representative of the adult population of the Province of Ontario (N = 1,292).

Eleven specific television form attributes, ranging from special effects to believability,were factor analyzed to seek possible underlying dimensions. Five factors were discovered: the importance of the attributes of production, dramatization, action, continuing dramatic series, and realism. Of these five factors, the first three were related positively to watching American commercial networks. There were no other strong relationships found between television form attributes and channel selection.

An additional section of the study was devoted to respondents' preference for television programming. Six major categories were revealed by factor analysis: cultural programming, geographical programming, entertainment, science, home-related programming, and informational programming. The importance of productive attributes was related positively with all programming preferences. As well, realism was correlated with watching informational and cultural programming.

Finally, it was found that achievement characteristics were positively related to attributes of dramatization and realism while negatively related to attributes of continuing series. In summary, television form attributes coalesce around aspects of production and performance; and the evaluations of television form are themselves associated with particular viewing preferences and behaviours.

INTRODUCTION

Content analysis has long provided a research approach with respect to various media. (See Berelson, 1952; Head, 1954; Larsen et al., 1963; Gerbner et al., 1969.) Attributes associated with the form of a particular medium have received far less empirical attention. In this paper, we have attempted to measure subjective evaluations of television form attributes in order to better account for audience perceptions of the television medium. Several additional aspects of audience characteristics were also investigated such as programme preferences, hours of viewing, channel selection and individual-level variables to further specify relationships between television form, attitudes and behaviours. Ultimately, we hoped to show that attributes of television form provide an important dimension towards a better understanding of this electronic medium.

McLuhan's (1964) work provided a unique, albeit abstruse, discussion of form with respect to media. It was his contention that the form and not the content of a medium was a unique determining factor, having wide-ranging effects over social, political and economic organization. As dominant media forms change, the ratios among our senses change, which thereby alter our perceptions of reality. It has been pointed out that McLuhan's work lacked formal theoretical structure, militated against empirical testing, was monocausal and hence, reductionist (Lorion, 1972). As such, McLuhan may have contributed to the dearth of empirical research with respect to media form.

Nevertheless, two attempts to extract testable propositions from McLuhan's work have been made. Lorion (1972) tested aspects of what he termed "McLuhan's concept of post-literacy", finding support for intergenerational differences in perception, but claiming that they were not necessarily determined by television viewing, as was argued by McLuhan. Dommermuth (1974) redesigned a laboratory experiment cited by McLuhan (1964) in order to ascertain the degree to which various media could be categorized by McLuhan's concepts of 'hot' and 'cool'. Dommermuth found no support for such differences. Neither study, however, was specifically concerned with developing a method for testing subjective evaluation of the relative importance of form attributes.

Unlike the above studies, which were specifically designed to test propositions from McLuhan, two further papers attempted to develop tests of television form. Hazard et al. (1964), provided scales for measuring 'nontopical' television program categories. These scales were so complex however, that raters were required to have at least a college education. This limitation would reduce the external validity of this study. Finally, Watt and Krull (1976) provided an "information theory" measure of form attributes. These were tested by judges and were not themselves directly evaluated by audience members.

In another paper, Watt (1979) has noted that

> An ideal set of form attributes would be generally applicable to all television programming, consist of unidimensional attribute variables, be expressed in television production measurement units, and be theoretically linked to audience effects.

We agree with Watt with respect to all but one of these suggestions. There appears to be no clear justification for production-based measurement units since form attributes may not be related solely to technical aspects of the medium. Indeed, form could refer to such features as dramatization of realism as well as to time sequences or editing. In keeping with these three remaining characteristics proposed by Watt, we chose eleven components of television form from a larger selection used in a pretest. It was anticipated that evaluation of these attributes would be correlated with television viewing behaviour.

HYPOTHESES

Within a technologically advanced society, it is expected that the technical qualities of production would be an important aspect of the evaluation of an electronic medium. Furthermore, since much of North American television programming is aimed at entertaining an audience, performance characteristics would form a basis for evaluating television. It is hypothesized that individuals who value highly the technical and performance aspects of television will watch more frequently. More specifically, individuals valuing production and performance will watch more of the type of television, in terms of networks and programmes, that contain higher degrees of technical quality and a greater number of performance factors. It is, therefore, hypothesized that the importance of production and performance is associated positively with watching American commercial television and programmes that stress entertainment rather than information.

The previous hypothesis has linked the importance of production and performance with the increased viewing of commercial television. It is further hypothesized that higher socioeconomic status is related positively to media sophistication, thus related negatively to viewing more popularized presentations of television. Individuals with greater education, higher occupational status and greater income are more apt to evaluate television form critically, that is, to find production and performance less important than individuals with less social standing.

DATA AND METHOD

The previously stated hypotheses were tested empirically using data gathered during the spring of 1981, as part of a general media use survey conducted by TV Ontario. The sample was gathered by a hybrid survey technique: the initial contact was made by telephone using the random digit dialling method with subsequent administration of a questionnaire through the mail. After weighing on several demographic variables, the sample is considered to be representative of the adult population of Ontario (original N = 1,291 weighted N = 1,292).

The eleven television form attributes items were factor analyzed (principle factoring with iterations rotated orthogonally by varimax method) in order to reveal the hypothesized underlying dimensions involving production and performance, while maximizing the difference between factors. Factor scores were derived from the factor-estimate matrix and were used in subsequent analyses.

Since we are measuring individual subjective evaluations of television form attributes, when relationships between attributes and attitudes or behaviours are examined, it is appropriate to use a symetric statistic such as the Pearson product-moment correlation coefficient for quantitative data. Alternatively, multiple regression is used to examine the relationship between individual-level variables (audience characteristics) and the television form attributes.

FINDINGS: PRODUCTION AND PERFORMANCE ATTRIBUTES

When the eleven television form attributes were factor analyzed, five orthogonal factors were produced. Although only the first factor achieved a final eigenvalue greater than 1.0, the five factor solution was retained because each factor was conceptually interpretable and explained at least 5 percent of the total variance (Table 1).

TABLE 1

Variables and factor loadings

	Factor					Communality
	1	2	3	4	5	
Camera work or photography	.71	.16	-.10	.02	.12	.55
Special effects	.65	.11	.13	.25	.10	.52
Editing	.56	.20	-.13	.04	.24	.42
Music or sound	.50	.19	.16	.05	.09	.32
Sets or location (place of filming)	.35	.17	.19	.29	.15	.30
Acting	.38	.67	.13	.11	.05	.62
Plot or script	.24	.75	-.14	.14	.26	.73
Well-known personalities	.06	-.08	.58	.28	.08	.44
Continuing story (as in Upstairs, Downstairs or Dallas)	.00	.04	.58	-.06	.06	.34
Fast pace	.13	.14	.06	.74	.11	.61
Believability	.12	.14	.13	.10	.51	.32
Eigenvalue	2.91	.95	.59	.47	.26	
Percent variance explained	56.3	18.3	11.3	9.0	5.0	

Factor 1 is the single most important factor, explaining 56 percent of the total variance. This factor contains items representing aspects of technical production. The importance of camera work (loading of .71), special effects (.65), editing (.56), music or sound (0.50), acting (.38) and sets or location (.35) are the major elements contributing to this 'production' factor.

The second factor is composed of two components related to performance; the first emphasizing the importance of plot or script (.75) and the second emphasizing acting (.67). These two items together contribute to a 'dramatization' factor.

Factor 3 appears to represent a dimension of performance as the importance of well-known personalities (.58) and the importance of a continuing story (.58) load highly. This is therefore, labelled the 'continuing drama' factor.

The importance of fast pace (.74) dominates the fourth factor, while additional items include sets or location (.29) and well-known personalities (.28). In total, factor 4 would appear to be measuring the 'action' component of performance.

The fifth and final factor also contains an element of performance, however, with emphasis upon 'realism'. The importance of believability (.51) has the highest loading on factor 5.

In summary, the factor analysis reveals that technical production and performance are distinct and important elements of television format in the minds of individuals. Moreover, the importance of performance is multi-dimensional, since it subdivides into dramatization, continuing drama, action and realism.

FINDINGS: TELEVISION FORMATS AND TELEVISION VIEWING

In spite of the fact that it was hypothesized that the importance of production and performance should be associated positively with the amount

TABLE 3

Associations between television formats and channel selection

	Production		Dramatization		Continuing drama		Action		Realism	
	r	Stat sig	r	Stat sig	r	Stat sig	r	Stat sig	r	Stat sig
American Commercial										
ABC	.14	.001	.11	.001	.03	NS	.11	.001	-.02	NS
CBS	.11	.001	.09	.001	.08	.001	.11	.001	.01	NS
NBC	.09	.001	.07	.004	.02	NS	.10	.001	-.03	NS
American Public TV										
PBS	.06	.017	.14	.001	-.06	.010	-.01	NS	.14	.001
Canadian Commercial										
CBC	.01	NS	.00	NS	.06	.014	-.07	.004	-.02	NS
CTV	.05	.039	.03	NS	.02	NS	.02	NS	.01	NS
Global	-.01	NS	-.04	NS	.00	NS	.06	.020	-.07	.004
Radio-Canada	.02	NS	-.07	.006	.09	.001	-.04	NS	.03	NS
Canadian Educational TV										
TVOntario	.06	.011	.00	NS	-.06	.024	-.08	.002	.05	.051

of television viewing, there is somewhat limited empirical support for this hypothesis (Table 2). In only one case is strong support found for the research hypothesis: the importance of continuing drama on television is correlated positively with hours of television viewing (r = .33). Even though the importance of technical production and action is positively and weakly related to television viewing, the importance of dramatization and realism is negatively and weakly correlated to the amount of television viewing. The latter finding is interpreted as individuals who are less interested in acting and plot and realism, are less likely to be heavy consumers of television.

TABLE 2

Association between evaluations of television formats and amount of viewing

	P		D		CD		A		B	
	r	Stat sig	r	Stat sig	r	Stat sig	r	Stat sig	r	Stat sig
Hours of TV Viewing	.08	.003	-.06	.021	.33	.001	.07	.007	-.05	.029

P = production D = dramatization CD = continuing drama
A = action R = realism

The analyses presented in Tables 3 and 4 permit a more detailed picture of the association between television formats and viewing behaviours. In support of earlier hypotheses, Table 3 demonstrates a general pattern that the importance of technical production, dramatization and action is positively associated with watching American commercial television. A similar pattern does not exist with respect to viewing Canadian commercial television. There are isolated examples of relatively weak positive associations (for example, continuing drama and watching CBC and Radio Canada); however, they are offset by an equal number of negative correlations (for example, action and watching CBC, and realism and viewing the Global network).

The viewing of American public television (PBS) and of Canadian educational television (TV Ontario) share roughly parallel relationships with the evaluation of television formats. For instance, there are weak positive associations between the importance of technical production and realism and watching PBS and TV Ontario, and a weak negative correlation between the importance of continuing drama and watching PBS and TV Ontario. As well, PBS viewers are more likely to value dramatization, while TV Ontario viewers are less likely to prefer an action format.

Findings concerning associations between what people feel are important aspects of television and what types of programming they watch are presented in Table 4. The most salient pattern is in the hypothesized direction: the importance of technical production is positively related to watching all types of television programming (cultural, geography, science, domestic, informational and entertainment programmes).

Among the performance factors, there are positive associations between dramatization and viewing all types of programming except geography. People who feel that continuing drama is important are more likely to watch entertainment and domestic (home-related) programmes on television, and less likely to watch programmes dealing with science. The preference for fast-paced action as a television format is associated moderately with watching entertainment on television and negatively related to watching cultural programming. When realism is a more highly valued aspect of television, individuals are more likely to watch informational programming such as news and current events, and cultural and domestic programming. Alternately, realism is negatively related to watching entertainment on television.

FINDINGS: AUDIENCE CHARACTERISTICS

The importance of technical production in television is not highly related to any particular audience characteristics. There are slight tendencies to suggest that housewives and the elderly place less importance upon technical production. Overall, it might be interpreted that the importance of technical production in television is spread throughout the audience.

The hypothesis that achievement characteristics are negatively related to the aspects of performance is not supported, since dramatization

TABLE 4

Associations between television formats and programme preferences

	Production		Dramatization		Continuing drama		Action		Realism	
	r	Stat sig	r	Stat sig	r	Stat sig	r	Stat sig	r	Stat sig
Cultural programming	.13	.001	.12	.001	-.04	NS	-.10	.001	.16	.001
Geography programmes	.10	.001	-.06	.022	.05	.052	-.01	NS	.07	.006
Science programmes	.17	.001	.07	.004	-.14	.001	.06	.016	-.04	NS
Domestic programmes	.09	.001	.08	.003	.26	.001	.01	NS	.10	.001
Informational programming	.07	.007	.08	.001	.01	NS	-.03	NS	.20	.001
Entertainment	.13	.001	.11	.001	.37	.001	.20	.001	-.12	.001

(beta = .15) and realism (beta = .17) are positively related to education. Nevertheless, it is found that the importance of continuing drama is negatively related to both education and income (Table 5).

A number of ascribed characteristics were included in the multiple regression analyses. Language, sex and age are relatively important determinants of several aspects of performance. For example, as age increases there is greater importance placed upon continuing drama and realism, but less importance on dramatization. Men, in contrast to women, find dramatization, continuing drama and realism less important, while the English-speaking audience is more likely to value dramatization and realism, but less likely to value continuing drama, than is the non-English-speaking audience.

SUMMARY AND CONCLUSIONS

The primary intent of this research has been to gauge individuals' perceptions of television formats and, subsequently, to examine the relationships between the evaluations of form and selected television viewing behaviours. Our study indicates that the quality of technical production is first and foremost in the minds of the television audience. In fact, the importance of production is associated with watching all the major types of television programming. As hypothesized, American commercial networks lead the way in attracting audience valuing production quality.

Despite the fact that it was hypothesized that performance was an unidimensional concept, empirical analysis reveals a more complex structure. Four separate elements - dramatization, continuing drama, action and realism - contribute to the aspects of performance.

Nevertheless, it can be suggested that there are two basic domains of performance attributes. Although television is suited to neither high definition nor resolution, some members of the audience find exactness and intensity more compelling than seeing actors/actresses in roles.

TABLE 5

Regression of television formats on audience characteristics

	Production	Dramatization	Continuing drama	Action	Realism
Education	-.01	.15***	-.18***	-.04	.17***
Income	.02	.05	.08**	-.04	.00
Occupation[1#]					
Professional/Managerial	-.17	.06	.04	.13	.01
Clerical/Sales	.08	.15	.14	.15	.09
Skilled labour	.08	-.16	.14	.03	.18*
Unskilled labour	-.02	.00	.17	.25*	-.08
Student	-.13	.06	-.06	-.14	.15
Housewife	-.21*	-.08	.06	.06	.02
Age	-.09*	-.08*	.21***	-.05	.20***
Sex (Male)[2#]	.04	-.16**	-.17***	.02	-.12**
Marital Status[3#]					
Single	-.06	.09	.05	.18*	-.01
Married	-.10	.04	.04	.10	-.02
Community size	.02	.00	-.05	.01	.00
Language (English)[4#]	-.07	.32***	-.25***	.11	.17***
Children[5#]					
Preschool	-.04	-.07	.16***	.14*	.09
Primary school	.09	.08	-.06	-.04	-.04
High school	.07	-.07	.08	.13*	.06
Variance explained	.03***	.09***	.16***	.04***	.07***

Unstandardized regression coefficients

[1] Reference category -- Not in the labour force

[2] Reference category -- Female

[3] Reference category -- Widowed, divorced, separated

[4] Reference category -- Non-English speaking

[5] Reference category -- No children in age category

Statistical significance -- .05 -- *
.01 -- **
.001 -- ***

For those people, believability, acting, scripts, and plot may play a more central position in their television viewing than well-known personalities, continuing story or fast pace. When emphasis is placed upon the former group of form characteristics, audiences may be responding to the more literate, orderly and sequential aspects embedded in the television medium (Lorion, 1972). Indeed, we have found that the more highly educated and the English-speaking audience value these attributes.

The dimension of form appears to provide an important approach to the study of television viewing. We have taken some initial steps in this direction. More research is needed to invesitgate and refine this conceptual area. In particular, it would be helpful to study the relationship between life interests, activities and subjective evaluation of television form attributes.

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PREDICTING PERFORMER EFFECTIVENESS: METHODOLOGIES FOR TV PRESENTER SELECTION

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ABSTRACT

The question of 'who' and/or 'what' constitutes an effective ETV presenter, at least according to the available research evidence, is poorly defined. While audience ratings have generally served as the criterion for retaining or cancelling a given performer, they provide little or no indication as to how efficacious he or she might be in facilitating the informational or attitudinal goals of a particular programme or series.

This paper initially provides an overview of trends which have emerged from the available literature on presenter variable research. It is concluded that while the majority of studies makes useful contributions to communication theory-building, they offer only limited insight to the selection of an effective ETV presenter. What appears more important for current research concentration are methodologies which might allow the gauging in advance of predictable outcomes for a given speaker's performance.

Against this background, the major focus of the paper is directed towards describing an area of research which examines the strength of presenter delivery styles through attribute clusters resulting from factor analysis of semantic differential scale ratings. Attribute clusters in turn are analysed in relation to their influence in stimulating information acquisition and attitude change. Examples are included from a project presently under way at Concordia University which contrasts the delivery styles of four professional television newsreaders and their effects upon a college student audience. An additional analysis tests the influence of recapping news items upon stimulation of information recall.

INTRODUCTION

One of the more neglected areas of television variable research has an examination of 'who' or 'what' constitutes an effective ETV presenter.

In practice, audience ratings have served as the main criteria for retaining or cancelling a given performer. Unfortunately, this index provides little indication of a performer's effectiveness in an informational or educational framework.

In the area of newscasting, where much of the survey research has been focussed, the attributes of newscaster appeal to mass audiences have been examined (Cathcart, 1979; Sanders & Pritchett, 1971; Shosteck, 1974). High newscaster appeal is assumed to hold a strong positive correlation with maintaining or increasing newscast ratings and accordingly provide convincing evidence of the effectiveness of a given presenter. In general, however, the 'newscaster appeal' research may be summarized as being of limited utility for the ETV producer since a) subjects were asked only to submit attribute preferences of news personalities, and b) no attempts were made to evaluate the relationships between preferred characteristics and cognitive and effective dimensions of production contents, either or a combination of which form the basis of educational television.

Within the more narrowly circumscribed area of experimental research, one must also conclude that meaningful trends which might serve as guidelines for presenter selection in an operational setting are equally limited. Studies to date have examined the effects of 1) uniform or rank of instructor in teaching U.S. Air Force students (Calkins, 1971); 2) body type on source credibility and interpersonal attraction (McCain & Divers, 1973); 3) age and appearance on information recall and attitude change (Coldevin, 1977); 4) ITV instructor versus trained communicator on cognitive achievement (Wardell, 1976); 5) eye-contact levels on learning, interest and achievement (Westley & Mobius, 1960; Connolly, 1962), and presenter ratings (Coldevin, 1979; Baggaley, 1980); and 6) prior knowledge of performer (Baggaley, 1980). Salient findings from the foregoing studies are as follows:

- The degree of homophily or the perceived similarity in beliefs and value structures between a speaker and a viewer plays a significant role in fostering attitude change (Coldevin, 1977);
- A professional newsreader was able to generate significantly higher learning scores than an ITV instructor (Wardell, 1976);

-Presenter ratings are enhanced when readers work from a desk script (medium eye-contact) as opposed to reading from a teleprompt and exhibiting high eye-contact (Coldevin, 1979; Baggaley, 1980);

-Prestigious introductions significantly influenced subsequent ratings of a speaker's credibility (Baggaley, 1980).

The major contribution of this type of research may be summarized as working toward theory building and serving as examples of the type of performer variables which might be profitably reexamined in specific situations. Most of the studies were conducted with college students and accordingly the generalizability to other learning groups may be spurious. The dual influences of television socialization and visual literacy also suggest continual monitoring of 'established' performer variable effects over time, primarily with younger viewers.

A particularly important facet of the research conducted thus far is the finding that a dynamic teacher in a traditional setting may not necessarily demonstrate the same effectiveness on television. McMenamin (1974) for example,found that an instructor was rated as significantly less 'forceful' in television presentations than in face-to-face lectures; reference has already been made to Wardell's (1976) study showing a television newsreader to be more effective than an ITV presenter when delivering identical instructional material. Both these studies hence suggest that conventional procedures for ETV presenter selection may be considerably lacking. In short, what appears more important at this stage of presenter variable research is the development of a methodology which would allow the gauging in advance of predictable outcomes of a speaker's performance for a given set of program objectives.

Baggaley (1980) has initiated some promising work in this regard. Four attribute clusters have been isolated which describe the loadings of presenter ratings from a variety of studies conducted in England: Integrity (reliable, sincere, honest, direct), Empathy (humane, pleasant, friendly), Mastery (profound, strong, interesting, straightforward), and Poise (relaxed, not nervous). These clusters are further related to personal (integrity and empathy) and professional (mastery and poise) dimensions.

Building upon these four 'superfactors', it is possible to set hypotheses and to test the optimum qualities of a speaker for the effective delivery of information (e.g., mastery and poise) and maximum attitude shift (e.g., integrity and empathy). Dependent upon the objectives of a given program, speakers could then be selected upon the basis of empirically validated attributes.

With these perspectives in view, a pilot study was undertaken to 1) replicate the formerly described research methodology in a Canadian setting, and 2) determine the effect of cluster loadings on information acquisition from a simulated newscast. Additional objectives in this connection were to ascertain the differential effects of male versus female newsreaders and 'youthful' versus 'mature' speakers. Finally, the effect of recapping some of the news items in 'headline form' upon specific information retention was tested.

METHOD

Presenter Selection

Two professional newsreaders from both sexes were engaged for the study and separated for analysis on the basis of their perceived ages by the sample. One female presenter was perceived as being in her mid-twenties (hereafter referred to as Young Female), with the other in the late 30's to early 40's (Mature Female); one male presenter was perceived as being in his mid-thirties (Young Male), with the fourth speaker projected as being in the 40's to early 50's (Mature Male). Presenter age plus sex hence formed integral components for analysing the principle variables under consideration.

All presenters were currently or previously English speaking television anchor newsreaders for regional Montreal broadcasts.

Experimental Materials

For the pilot study, it was decided to simulate a 'local news' broadcast format. Scripts were developed from wire service copy concerning real stories; background visuals and cutaways were either prepared or selected from released footage. Newsreaders worked from a desk script format The target timing of the complete production was 8½ minutes with seven minutes devoted to 10 news items (proceeding from an international to national and local/regional focus), one minute to commercials, followed by a twenty second recap headlining four items. Each of the recapped news was selected arbitrarily with the recap *per se* consisting of a short phrase or 'cue' designed to stimulate recall of the item (e.g., *China Signs Wheat Deal with United States*).

The productions were intended to approach professional standards, and to this end, their execution was undertaken by a professional television director. With the exception of one of the four speakers and variation in timing of individual presentations, all production details were identical. All final productions were within thirty seconds in length with the average timing being eight minutes, 20 seconds.

Testing Instruments

The testing instrument consisted of two major sections, in addition to questions eliciting demographic information, television viewing habits, and perceived ages of the news readers: An 18 item, seven point semantic differential scale assessing viewer ratings of news readers, and a 28 item multiple choice information recall test. The information acquisition test was developed from an original pool of 40 questions and subjected to item analysis. Twelve questions were excluded; a KR-20 reliability of .90 was obtained on the 28 items retained. Of the 28 test items, 11 were related to the 4 news items which formed the basis for the recap. The remaining 17 test items pertained to the 6 news stories referred to in the recap.

Sample

The sample consisted of five classes of second year English literature students drawn from a local community college. All participants were English speaking from middle to upper middle class backgrounds. One class each was exposed to one of the video tapes featuring one of the four newsreaders with an additional class serving as a control group. individual randomization of S's to treatments was precluded by random assignment of student to classes. Intact groups were hence used throughout the sampling. Class sizes ranged from 16 to 26 students. The average age of S's was eighteen with the sex distribution being virtually evenly split (50.5% male and 49.5% female).

RESULTS

Analysis of Presenter Effects

Table 1 shows the mean information acquisition scores generated for each of the news presenters and the control group. When subjected to a one way ANOVA, significant differences were found between all presenter scores and the control group, F(4, 104) = 19.65, $p < .001$. Mean comparison tests revealed no significant differences among the male presenters nor between both male and female scores. Differences between the scores accruing to the two females, however, were significant ($p < .05$) with the Mature Female being superior (Figure 1).

TABLE 1

Mean information acquisition scores for treatment and control group

Group	$\overline{X}$	S.D.	n
Mature Male	17.38	3.35	21
Mature Female	18.48	4.19	21
Young Male	18.15	4.41	26
Young Female	15.40	3.30	25
Control	8.82	3.31	16

Analysis of the means accrued to the performers on the scale ratings pointed up many significant differences between males and females and among the females, but not among the males per se. In general, both males scored consistently higher across the majority of indices used. Our central focus in the study, however, was not to evaluate the differences in semantic differential ratings as an end in itself, but rather to determine the effects of the salient appeal characteristics among the presenters as rated by the total sample. To accomplish this, the semantic differential

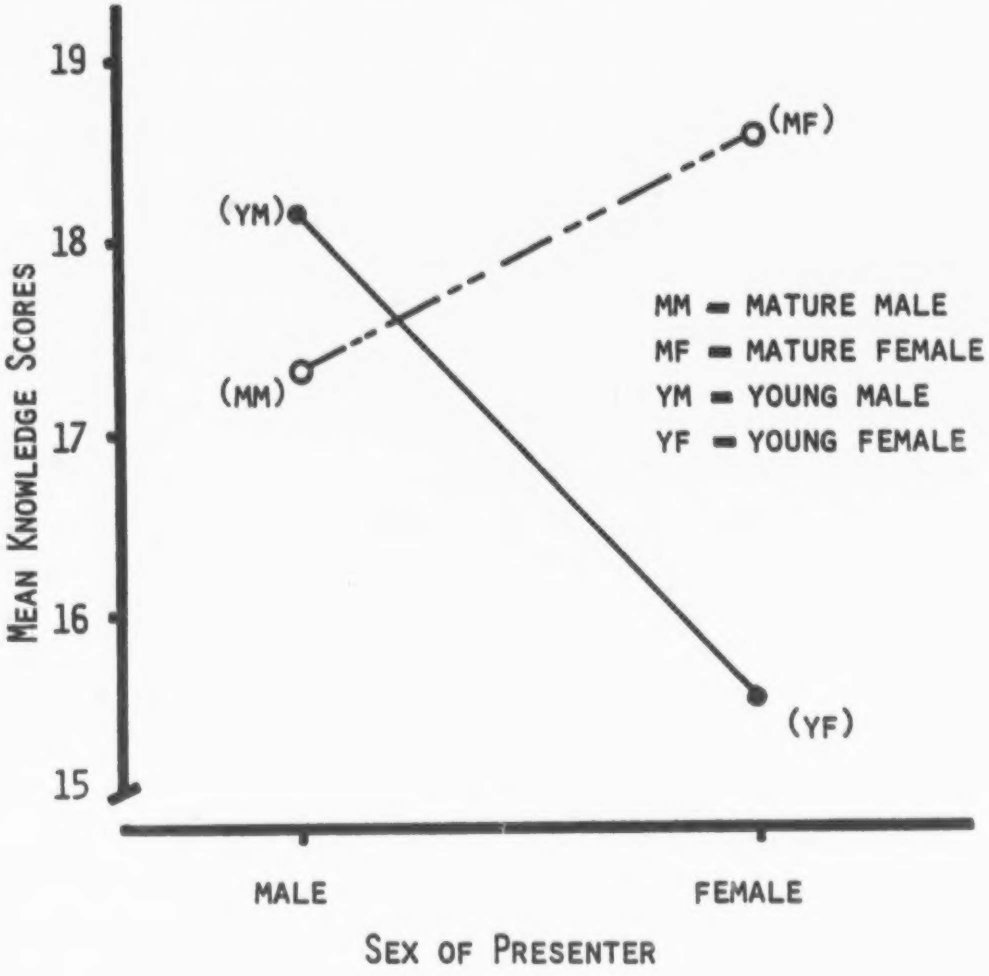

FIGURE 1 Interaction of presenter age and presenter sex

scales were first subjected to a Varimax Factor Rotation (Nie _et_ _al_., 1975). The common appeal factors which resulted are displayed in _Figure 2_.

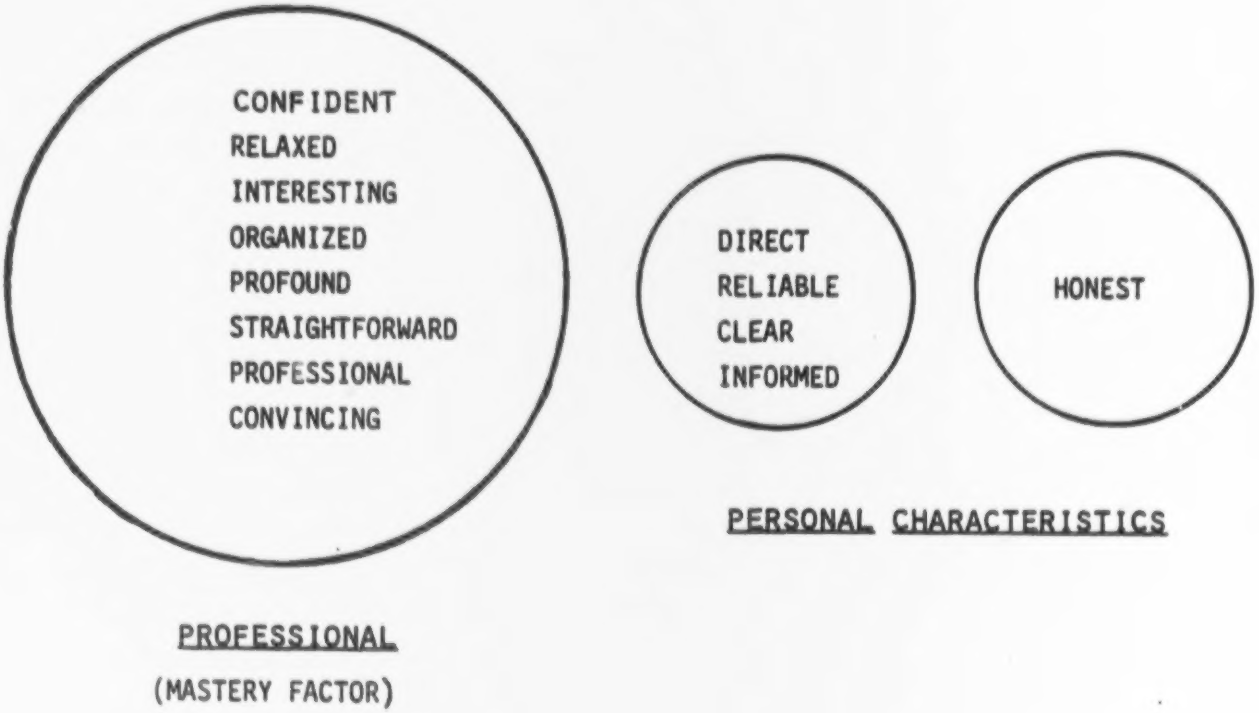
CONFIDENT
RELAXED
INTERESTING
ORGANIZED
PROFOUND
STRAIGHTFORWARD
PROFESSIONAL
CONVINCING
DIRECT
RELIABLE
CLEAR
INFORMED
HONEST
PERSONAL CHARACTERISTICS
PROFESSIONAL
(MASTERY FACTOR)

FIGURE 2 Common appeal factors identified among presenters

A further analysis was performed to select _the_ discriminating attribute(s) between the four presenters through discriminant function analysis. This test brings into relief the distinctive function(s) upon which the groups are expected to differ. Each function is composed of attributes among which one emerges to define that function. In the present case, the function HONEST accounted for some 77% of the total sample variance. The attribute _honest_ in turn accounted for 55% of the total function variance and was the *single most discriminating variable* describing differences between the performers.

In returning to our analysis of the semantic differential scale ratings, we found that the Mature Female had the highest positive individual score on the HONEST - DISHONEST continuum ($\overline{X} = 6.00$). When subjected to two-tailed t-tests, this score was not significantly higher than either of the scores generated by the males ($\overline{X} = 5.52$ for the Mature Male and 5.84 for the Young Male), but was significantly stronger than the mean of 5.24 produced by the Young Female ($t = 2.26$, $df = 44$, $p < .003$). And as noted earlier, the only significant information score differences were found between the Mature versus Young Female presenter.

The pattern which emerges from this sample, therefore, is a decided preference for 'honesty' which is reflective of the *personal* dimensions a speaker's performance. This in turn appears to facilitate optimal information retrieval.

Effects of News Recapping

Figure 3 shows the total effects of the recapped items on information recall and that generated by individual presenters. In general, the difference between means accrued to recapped and non-recapped items was 9% (67.3% versus 58.3% respectively). These differences were found to be significant when the raw data were subjected to a Chi-square test ($\overline{X} = 21.01$, $df = 1$, $p < .001$). As might also be noted, this trend is constant across all presenter treatments.

DISCUSSION

Although the results obtained should be viewed within the exploratory nature of the study, several tentative conclusions may be drawn. The more obvious of these concerns the connection between *the* discriminating attribute selected by the total sample and the significant knowledge gains made by the group viewing the presenter with the highest mean rating on the discriminating attribute. This suggests that the general appeal attributes produced by the factor rotation analysis may only

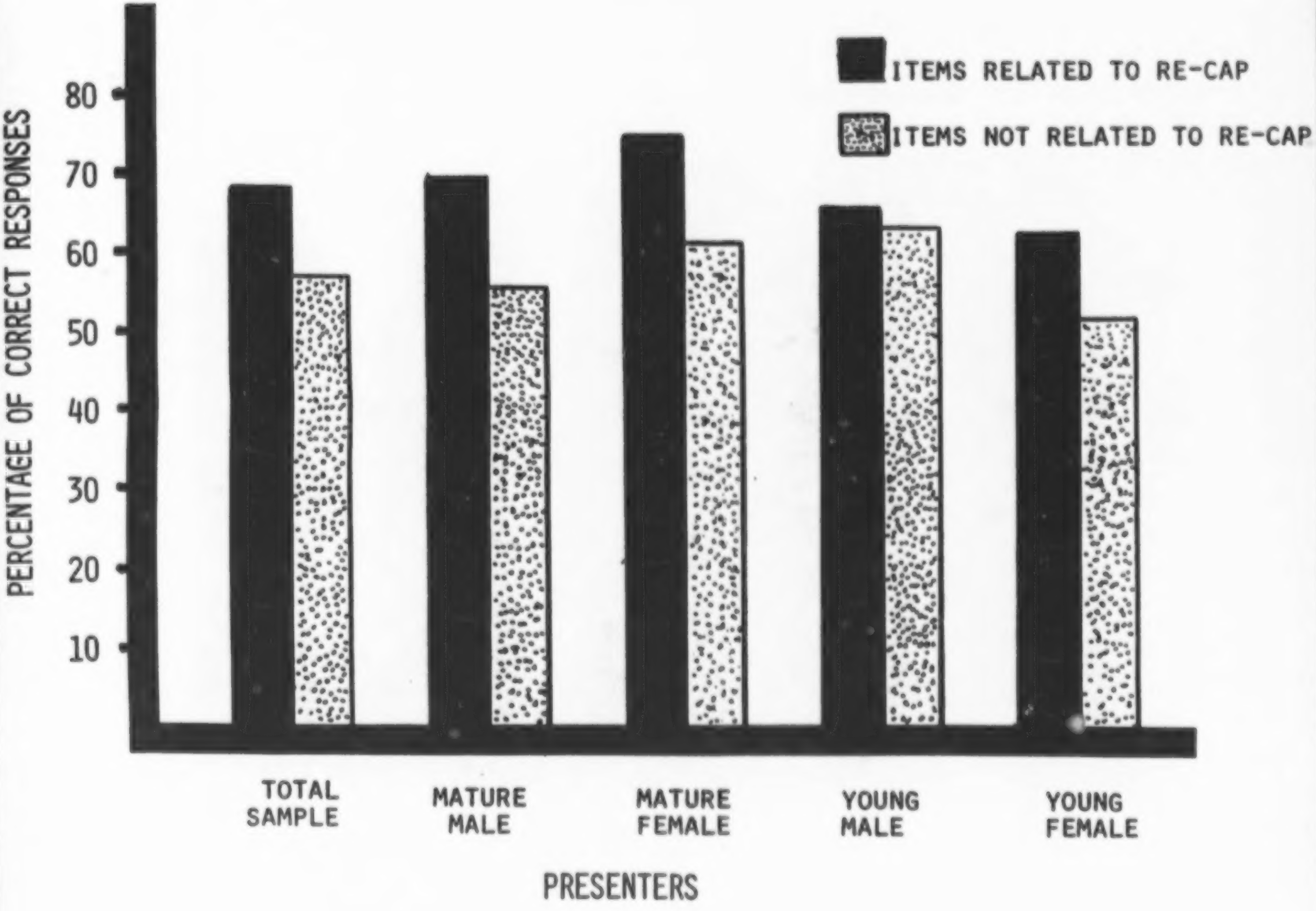

FIGURE 3 Comparison of correct responses for Re-cap versus Non Re-cap items

serve to define the context in which a given presenter is perceived and favourably rated; the determinants of effectiveness, however, at least in relation to information delivery, appear to reside in a small number of key variables. Much more research is needed to validate this supposition but the potential for predicting a performer's strengths in advance of production makes it worthy of concerted effort.

Significant differences found between the majority of semantic differential ratings runs counter to a previous study in sound broadcasting comparing professional male and female newscasters (Whittaker & Whittaker, 1976). It is apparent that the qualities associated with voice may constitute only a small portion of a television presenter's appeal. Since this paper reports the first television inquiry in the area, it is evident that more investigation is required before any suggestions are advanced concerning the question of choosing a presenter on the basis of sex. Education contexts would also benefit from a sustained inquiry into this highly practical performer variable.

The more surprising result of the study was found in the significantly superior information gains stimulated by the inclusion of the recap. This is obviously high value for relatively little effort in that a 9% gain in information was generated by approximately 4% of total production time. Taken at face value, the potential of this type of cueing for increasing the effectiveness of information presentations appears noteworthy.

It should be reiterated that the pilot nature of the study precludes generalizability to other populations and stimulus materials. Nevertheless, the methodology described in this paper appears to offer considerable promise as a diagnostic process to improving the choosing of a presenter for a specific set of program objectives. Both informational and educational television stand to profit accordingly.

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BIOMETRIC COMMUNICATION RESEARCH FOR TELEVISION

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ABSTRACT

Biometric communication research deals with the information impact of a film or television show, photographic picture, painting, exhibition, display, or any literary or functional texts or verbal stimulus on human beings, both individuals as well as in groups (mass audiences). The paper summarizes the history of biometric research and current uses of biometric systems in Canada, the U.S.A., Australia, Sweden and Germany. Single and multiple-channel biometric systems are described. Diagnostic procedures for pre-testing, testing and post-testing stages are explained. Use of direct laboratory measurements and telemetric apparatus is discussed with reference to the differences within television audiences.

HISTORY AND FUTURE OF BIOMETRIC RESEARCH

Although connections between neural psychical processes are mentioned briefly by Paracelsus, the first scientific experiments in this area began in the 19th century.

The Austrian physiologist, Johann Evangelist Purkinje (after whom Purkinje cells in the human brain are named), had made a series of experiments during the period 1834-1852 in Vienna and Breslau, aimed at establishing a connection between the human brain and psychical processes of human behaviour. He constructed a series of stroboscopes, named 'kinesiscopes' for primitive tachistoscopical observation of images and the response to the series of test pictures (made on daquerrotypes), matched with data regarding blood pressure (blushing), body temperature and speed of mnemomotoric movements of the face and body. Results of this research were presented to the Austrian Academy of Science in 1852 with a major classification of human behavioural types (choleric, sanquinic, melancholic ....). This classification was used until the end of the 19th century in psychiatry.

H. Helmholz observed in the years 1853-1861 the response of the human eye to the psychological events (e.g. fear, surprise, joy) in great detail, and tried to connect the saccadic movements of the eye to the person's psychical nature. He devised a primitive ophtalmoscope, working on the principle of the corneal reflection on a gas flame, registering the deviations on an horizontally photographic plate.

Jean Ettienne Marey, the French physiologist, performed numerous experiments during the years 1874-1886 with cardiographic registrations in his physiology laboratory. He observed a definite coincidence between psychical processes and the change of heart beat rates, working with mechanical and pneumatical cardiographic instruments.

Adalbert Londe constructed in 1888 a special chronophotographic camera for the registration of multiple physiological responses. The first electrophysiologic experiments were attempted in various countries during the first two decades of the 20th century. The first distinct EEG registration known is from G. Leurier's Laboratory in Paris in 1913. At that time, the electrical response from the brain's cortex was believed (incorrectly) to be a direct measure of the 'rate of thinking' or 'intelligence'. Neither instrumentation, nor the electrodes, were capable of registering more than a slight deviation of the ohmeter needle. The first registration of EEG responses on paper appeared in 1924, the first EMG registered response in 1928, and GSR (or lie detector registration) in 1931.

There were various theories of what caused the fluctuation of electromagnetic field within the human body, ranging from the theory of 'fields', 'neuroelectrical mechanism' to sheer postulates of 'energy emanators' and ESP electrical power potentials. In 1939, the Czech neurophysiologist, J. Laufberger, postulated the first scientifically documented theory of 'neuron circuitry'. Under his theory, the electrical potential and its changes are relevant to the level of inner energy of the neuron cell, and the fluctuation of such energetic potential is an exponent of the 'work' the neuron does. He also postulates the interconnection of neurons via axons into the 'circuitry', and associated the spike of EEG recording with passing energy quantum through the measured point. This theory was revolutionary at a time when very little was known about the mechanical changes inside the neuron cells, as well as regarding the functions of the cell membranes.

In 1946, Norbert Wiener advanced the system theory under the new name of 'cybernetics', and part of his work had an influence on the thinking of the human brain as an information processing system. As an indirect result of this thinking, the Swedish neurophysiologist, S. Malcolm, developed the first information scheme of the brain in 1951 and postulated the inter-connections between the symptomatic and peripheral neural systems. His work gave solid ground for further study of EKG, GSR and EMG responses to the psychical processes.

Between the years 1952-1958, the Belgian researcher, Ing. Sallesi-Lavergne, built the first known biometric laboratory for the measurement of physiological responses to films in Bruxelles. He employed a combination of psychological and physiological measurements. The indirect observation and conditioning (via infrared photography) was combined with GSR and ESR response registration.

During the same period, two other biometric laboratories were built in Czechoslovakia and Russia. At the Purkinje Physiological Institute in Prague, there was in operation a five-channel biometric laboratory aimed at the measurement of responses from the psychical impact of exhibitions, museums, galleries and various propagandistic materials. The results of this endeavour later led to the development of unconventional exhibition styles and performances, known as polyecran, Laterna Magica or kinoatomat.

In the Soviet Union, Professor Yarbus started experimentation with physiological measurements of audiences in 1952, and perfected the electroretinographic instrumentation and methodology to a great extent. The major part of the work was carried out in Moscow during the '50's and '60's, but the laboratory ceased its activity after 1967.

In Japan, Professor Yagi started his experimentation with multichannel biometry in the early '60's and developed a very sophisticated biometric laboratory at Nihon University in Tokyo. The Japanese contributed greatly to the miniaturization of biometric scanning equipment and to the indirect increase of electrode sensitivity (amplifiers).

A major breakthrough was presented in 1965 with the invention of the distant electrode scanner (Harrison, England) and very sensitive barium lythium electrodes, although practical use was hampered by a high level of noise present within the scanned signal.

In the USA, the long tradition of electrophysiological responses research dating from 1921 (McCall, Greene, Laskin) was first enhanced during the '30's when experiments of a biometric nature were taking place in Bloomington, Indiana (Gilbert, Morse, Dunn), in Baltimore (Bailey, Miller), and in Rochester (Minn). The second major advance occured during the '50's (Haber, Stark, Atkinson, Hubel, Campbell, Thiel) with specialized recording of various biometric channels. During the '60's, the first spectral analysis of EEG were performed by Zeitlin, Gevins and J.P. Spire, and similar work was carried out in the analysis of auditory and visual stimuli by Stacy, Lear, Griffin and Olivier.

In the past ten years, we have seen a number of approaches or experiments in the USA and Canada with much relevance to the biometric study of films, radio and television programs. The most publicly known biometric research concerns visual information input, in the so-called 'eye movement studies'. Experiments of this type are numerous, with at least four major groups of experimenters, several manufacturers of instrumentation and an unknown number of applications:

- The basic tachistoscopic research is carried out at Bloomington, Indiana, with the largest U.S.A. manufacturer of instrumentation (Lafayette).
- MIT with its Advanced Visual Studies group carries out experimentation with a combination of electro-oculography and electroretinography with manufacturers of instrumentation (Biometric/Narco Medical group).
- A Los Angeles group is working at UCLA under Professor H. Suber on the cognitive aspects of visual stimuli - with the support of a U.S. dealer of Japanese instrumentation (National Camera Corporation).
- In Montreal, Canada, Technolab Industries have researched intensively into aspects of visual sensory tracking.

Much less is known of researchers in the EMG and GSR responses:

- Kinsman, Robinson and Gatchel have researched GSR and EKG responses to speech.
- J.E. Fletcher at the University of Georgia was very active in the field of GSR measurements, applied to cortical information processing.
- R. Wells applied GSR and BSR measurements to reactions of a cognitive nature.
- J.R. Kennedy experimented in Toronto with GSR measurements applied to films.

Least clear of all is the application of EEG measurement, in which the signal carries enormous quanta of noise:

- Walter and Peterson (at J. Hopkins Hospital, Baltimore) performed the first attempts of EEG spectral analysis, using a short piece of film as the stimulus in 1969.
- Blackman, Cooley, Lewis and Welch performed the first Fourrier transformations of EEG recordings, using as stimuli a series of photographs and recorded pieces of music in 1975.
- Remond, Smith, Andrews and Sampson attempted the first chemospectrographic analysis with the use of sonic detectors, using TV commercials as stimuli in 1977.
- At Stanford Research Institute's neurophysiology laboratory, experiments are underway with the use of acoustic optical chemospectrographical scanning (holographic system), where regular TV programs are used as stimuli.
- In Montreal at Concordia University, a multi-channel biometric laboratory has tested the information impact of films and television programs since 1974.

If we look at current and future uses of biometry in film and television, the following trends can be foreseen:

1. Within a few years, more laboratories such as ASI in Los Angeles will establish themselves, using biometric instrumentation.
2. Within the academic field, we may encounter a dozen or more universities active in biometry, with (e.g.) Indiana, UCLA, Columbia, Stanford, MIT

leading in research instrumentation and laboratory facilities.

3. In clinical biometry, we can foresee the establishment of several biocybernetic laboratories within major hospitals (two are already in operation at J. Hopkins, Baltimore and Pallisades, New York; two others are under construction - the Mayo Clinic in Rochester and one at Ann Arbor, Michigan.
4. In instrumentation, we can foresee a certain decline in U.S. development and a rise in Japan and Europe (Germany, Sweden).
5. A major methodological thrust will lead from single-channel recording to multi-channel recording then to spectrographic and Fourrier transform analysis, to the computer diagnosis.
6. During the next decade, the emphasis will definitely be on multiplex EEG recordings, with sonic and optical/sonic sensing of the brain, and with distant electrodes in the not so distant future. In the meantime, various telemetric set-ups (such as Datel) will be improving the range and efficiency of signal transfers.

METHODOLOGY AND INSTRUMENTATION IN BIOMETRIC RESEARCH

There are three kinds of energy changes measurable in bioinformatics:

- thermal changes (changes of body temperature);
- electrical changes (EEC); and
- chemical changes (chemospectrographic).

Any of these changes can be interrelated at one time, with the time axis projected into each.

The interval between the changes at the same level is called biometric potential. When you see the graphical records of certain variations, their peaks and lows are the record of these potentials. They correspond to the energetic processes in neuron systems, and are activated via information input, processing or storage, and by many other processes not connected with bioinformatics. This process is very far from simple interpolation. Quite sophisticated diagnostics have been developed over the last forty years, from quantitative, comparative analysis to the analog-digital 3-D Fourrier analysis of biometric data.

As far as we know, biometric research provides an unusually deep and precise tool for insight into human bioinformatics. A basic biometry laboratory could test a variety of stimuli, ranging from simple photographs, posters, films, TV programs, literary texts, scripts and stories, as well as actual documentary and news material.

For measuring the information impact of films and television programs on the human mind, the biometric laboratory consists of:

- sensoric scanning devices (electro-oculograph, combined with electroretinograph, audimeter with audiospectrograph);
- cortical processing devices (electro-encephalograph with electrochemospectrograph);
- control feedback devices (electromygraph, electrocardiograph, GSR and BSR monitoring channels, ENTG monitoring channel); and
- registering devices (data-graphs, x-y plotters, polygraphs, digital converters).

This set-up is a basic one, and could have many instrumentation variations.

For diagnostic purposes, the following devices are essential:

- PDP 11/25 computer;
- 16k of core memory;
- AD-01 analog to digital converter;
- AA-11D digital to analog converter subsystem with scope control unit;
- Tectronix 613 storage tube display; and
- TC-11 dual DEC tape drive (or RK-05 disk).

For programming service we employ:

- DEC RT 11 operating system with system programs;
- DEC BASIC RT 11 interpreter; and
- Graphic display routine for BASIC RT 11.

In general, there could be theoretical divisions between research into the information source, the transmission conditions, and the receiver feedback. There could also be technological and methodological differences relating to the visual, audio, or audio-visual input. Finally, there is a significant difference between the test subjects.

In practice, all these aspects are present when complex tests are conducted. However, there are several basic laws which must be followed in order to understand and to practically use the test results:

1. I assume, that every person receiving media input is different, specific,

and could have a specific biometric response.

2. I assume, that transmission conditions could change the form and content of the same input.
3. I assume, that the results of precise tests must be of a synthetic, cummulative character, containing also the parts of the information with little or no relationship to measured input.

Therefore, the following methodological rules must be observed:

1. Before a test is made, a precisely programmed pre-test is essential. This is a key for further diagnosis of graphical test results. The stimuli for the pre-test must be as natural, as simple, and as similar as possible for all tested subjects.
2. Any change observable in the person's external behaviour must be recorded on the test - also any adjustments made by the instrumentalist during the testing periods.
3. The recorded test should be verified by a battery of stimuli-related questions, and coded on a test strip. If the verbal and direct sensory tracking conflicts, the test should be repeated.
4. All tests should be read comparatively, cued by the time log of input.

Any test in biometric communication research could be made on single- or multiple-channel biometric tracking equipment. Generally, if we use tests for pre-production searches, multiple-channel tracking is the best mode. During media production (film or television, exhibition installations), single channels could provide the producers with specific insights. For finished media products, multiple-channel recording could answer most questions regarding information impact.

Single-channel Tracking

Generally, in this situation we are extracting either part of the input or part of the processed information. Therefore, the test could be the only generalized indicator of the whole information process. The best set-up of single-channel visual tracking known is a combination of oculograph, electrooptical retinograph, recorder and plotter. This assures the tracking of the input, partial processing and immediate eye muscular response. The result of such a measurement is a double graph, where the deviation of curves, matched, indicates the primary informational input in the visual channel (Figure 1).

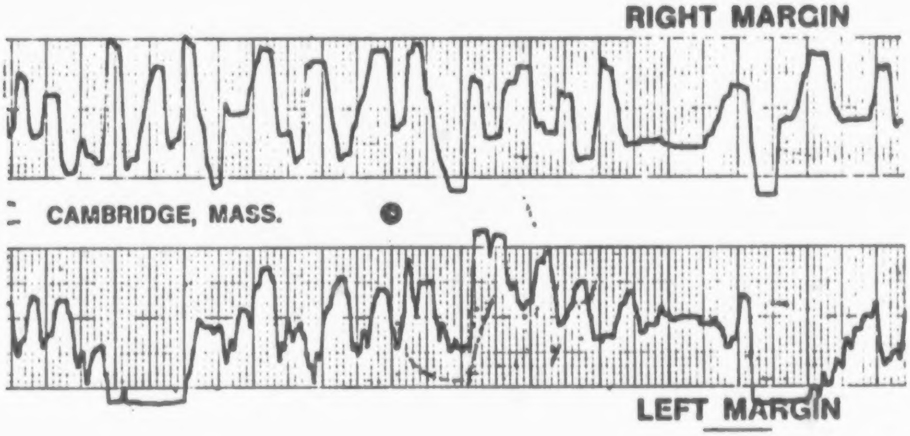

FIGURE 1 Double-graph tracking of visual processes

For single-channel audio tracking, the best set-up is a combination of audiometer, audiospectrograph, cerebral EEC and chart strip recorder. In this case, two analythic processes are recorded: the information source (of sound, music, voice, noise), and the processing of sound in the neocortex of the brain. The result is a triple-graph, where the amplitudes, spectral lines and EEC from the audio neocortex are matched, indicating the audio input characteristics and audio processing phases (Figure 2).

Multiple-channel Tracking

In studies of complex input (film and television programs, for example), it is advisable to use more channels to monitor information impact on test subjects. The best set-up involves a combination of input tracks (visual or audio, or both), plus several processing channels (EEC, EKG, EMG and GSR) using one or more channels as verifying logs.

In Figure 3, we are using the input channel as a time log. The EEC channel is the indicator of specific circuitry firings and the EDG is the indicator of stress wave developments. The EMG channel is a control for immediate responsive characteristics, and GSR is a cumulative responsive characteristics indicator. The time lapses between channels,

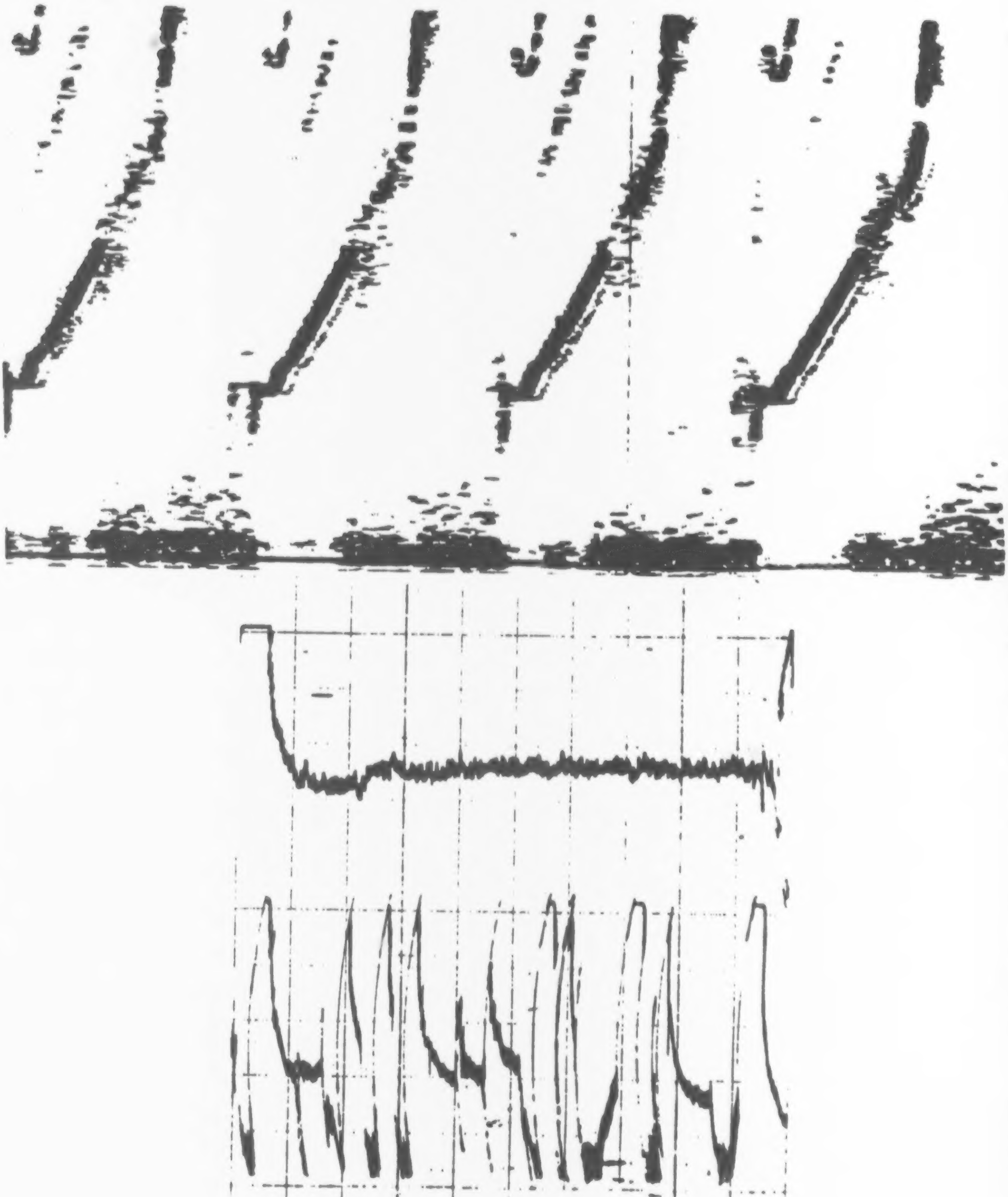

FIGURE 2 Triple-graph tracking of audio processes

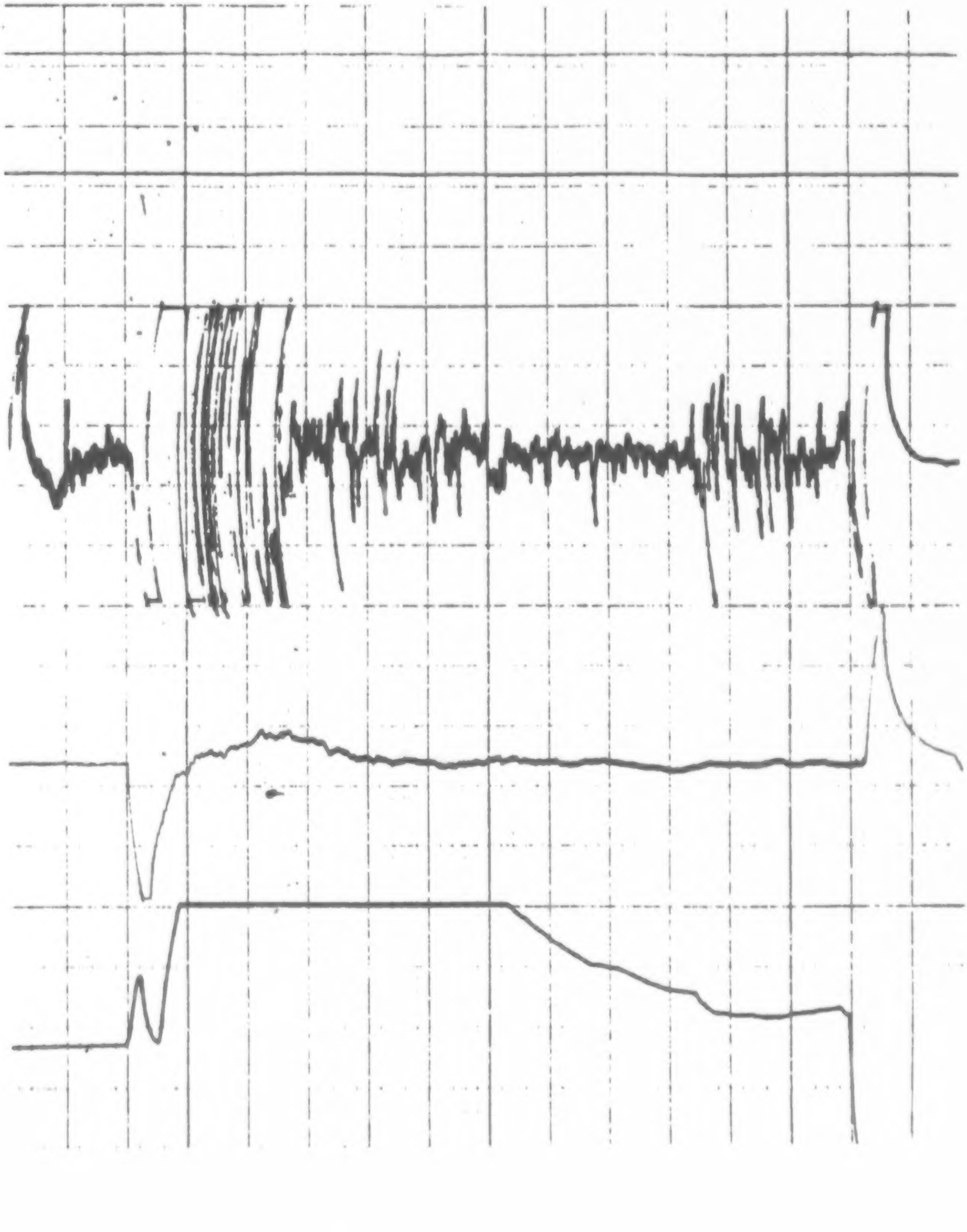

FIGURE 3 Multiple-channel tracking using EEC, FDG, EMG, and GSR measures

read vertically, are the control for the follow-up of the same input.

There are several difficulities in multi-channel recording:

1. The information-processing intensity of individual human neural systems varies highly. For this reason, pre-amplifiers and filters are used.
2. Processing and short-term memory time varies highly from person to person. Therefore, for different people (after pre-testing), different speeds of recording are used.
3. Comparative reading must take in account the changes in tracking.

SPECIFIC TESTS

A number of specific tests could be performed either in the design of a media production (film, TV program, display), or on the finished artwork. Each test could help the artist in a different decision, or phase of production:

1. General Readability (or Input) Test

   This is the test where we run the series of materials (pictures, recordings, film shots, TV sequences) for a selected sample of the audience. It is the easiest test, and also the fastest; the time of the test is the same as the time of the materials under study. Several points should be observed:

   a) During the pre-test, the stimuli or signs should be relevant to the borders of the sensoric fields or ranges.
   b) The test should follow the pre-test immediately (i.e. not longer than 2 minutes).
   c) As the initial input channel steadily diminishes, signifying the rising fatigue of the test person, the test should be stopped and re-run.

   In the diagnosis, the envelope curve rather than the isolated input curve is significant. It shows the general input, general processing and parts (times) of media pieces, called 'domains'.

2. Decision (Selection) Test

   This is the test where we search for an information 'domain' (part of a picture, a specific shot in a film, a sequence in a TV program). The domain test can follow the general readability test. It consists of a performance of an isolated information piece, with a short pre-test and post-test period. The results should be related to the first test. If comparable, the strength of the information domain lies in the piece itself. If there is a relative difference, the information impact has a cumulative character.

3. Basic Media Tests (colour, movement shape)

   Three sub-tests are performed if we are searching for the specific information impact of a certain colour, a certain shape in a picture, or a certain direction or speed of movement in the picture. If all three tests are applied to real or simulated input, the measurable impacts are related back to the first test, or to the pre-test, with similar stimuli.

4. General Processing Test

   This test is geared toward the information processing of certain stimuli. It should be combined at least from two channels: the first containing particular sensoric input tracking (audio, visual); the second from EEC recording on particular parts of the neocortex. Diagnosis may be done either on binary decision mapping, or on a particular part of the information (picture, sound). If a part recognition is in search, a plotter should be added to the sensory track.

5. Stress Wave Test

   This test is done if we are searching for stress wave development during the processing of information. It should consist of sensory input tracking, an EEC channel and, time-synchronized, the EKG channel. The electrodes should be on the main veins of the small circulation circuit, with the ground on the chest. When recorded, the part of the information input (the stress wave) is immediately visible on the EKG strip, within a 1-2 second range from the input. The intensity will vary highly from person to person. The length of the impact could cease within a few seconds or could be prolonged, in diminishing curves, for a longer time even without any further input (bouncing stress waves).

6. Reaction Tests

   These tests are performed if we wish to know the person's reaction, or desire, to feed-back on the information input. It consists of a sensory track, EEC and EDG plugged as control channels, and EMG and GSR as main recording channels. EMG channel has significance for immediate responses, the GSR for cumulative responses.

TEST METHODOLOGY

1. Preparation of Test Subjects

   The following are rules for test subject selection:

   a) Test subjects should agree voluntarily to undertake the test measurements, and sign a release form.

   b) A brief oral medical check-up is made. Pathological and retarded cases should be excluded from the test audience sample. Histology of each case is recorded confidentially.

   c) The aim of research, the method of research and the instrumentation of the test, are explained thoroughly to each person, so that possible fear of the laboratory environment is avoided. In cases of difficulty, the subject should be excluded from testing.

2. Test Performance

   These are necessary parts of each test:

   a) Input pre-test: For each input channel, the following pre-test should be made - range intensity, range contrast, range field. The ranges of visual or audio perception should be aligned with the ranges of the input instrument record. The zero stage should be aligned with no-input stage.

   b) Processing pre-test: For EEC and EKG channel, range of recording should be aligned with the basic binary response of a subject (open-close for visual, sound-no-sound for audio). For GSR and EMG channel the verbal direction to the desired or non-desired state should be aligned with the range of recording.

For both pre-tests, several repetitions within a narrow time period (approx. 30 seconds) are necessary. The reading should be identical on at least three successive recordings.

   c) First test run: Shortly after both pre-tests (approx. 2 min.), the first run of the test collection should be made. Time spans between the stimuli display should not overlap with incidental information processing.

d) Oral check-up: Immediately after the first test run, a short oral check-up should be made with reference to the registered reactions. Most of the questions should be geared to the parts of the test run where either non-aligned recordings occurred, or where a significant reaction was obtained. The reason for an oral check-up is to eliminate possible side-effects (motoric reactions, metabolic reactions, etc.) not related to the displayed stimuli.

e) Second test run: Approximately 10 minutes after the previous stage, a second test run should be made, preceded by a repetition of both pre-tests. On the second test run, the instrumentation should be aligned as close as possible to the parameters of the first test run. All differences should be marked on the pre-test (adjustment of potentiometers, follow-up of samples). Special attention on the second test run should be devoted to the areas of high reaction (information domains), and in this case a high speed of recording should be adjusted.

f) Marking stage: After the test is completed, the researcher should go over the test with the subjects, showing him/her the test results and asking questions in order to verify the test results. The test should be cleared of accidental results (instrumentation or operational mistakes), and the areas of high intensity results should be marked by envelope curves. Slide rules should be used for alignment of the time log for channel interactions.

3. Test Diagnosis

Following are the basic rules for biometric tests diagnosis (in the input area):

a) General activity characteristics: In an examination of eye-track or audiospectrographic (phonographic) recordings, the overall activity pattern should be easily visible. In both cases, the number of fixations give an indication of quantitative level of information input.

b) Information domain characteristic: Whenever a dense, short fixation period occurs, many fixations cumulating within a few seconds, and this period is followed by long, but sharply distinguished fixations, there is a high probability of information domain interception. Such an occurrence can be easily checked by x-y plotting of the image or a notated reading (e.g. a musical score).

c) Input storage periods: Periodically, there are visible marks on each input recording, when activity by the sensor is temporarily decreased for a short amount of time. In visual tracking, this could correspond with muscular activity of the eye (blinking for example), but it is not necessarily dependant on physical activities of the eye. The sign has a typical V characteristic of various amplitudes. The slip should always have more than a 30^0 angle and should not be delayed for more than 2/10ths of a second. It is on the lower border of persistence of vision (1/6th second). In audio tracking the slip could last even longer. Input storage periods signify the renewal of optical visual reading periods, from which the sensor is departing on a new and different pattern of interception.

d) Basic media characteristics: Intensity, contrast, colour and movement are basic media characteristics intercepted by the eye. Each of these leave a distinctive pattern on the biometric record. Intensity is related to the amplitude of recording, and contrast to the length of fixations. Colours produce the various lengths of fixations (shorter fixations, shorter wavelengths; orange, red and blue: longer fixations; the longest fixations are produced by the wavelength around 500-560 mmc and in the yellow-green area). Movement produces distinctive slip marks on the recording. The more fluent the slip, the faster the movement inside the image or of the image itself.

4. In the Processing and Storage Area

In this case, we are working with a system (brain neocortex) which is in a relative state of constant activity. We must distinguish the bio-perceptual rhythmical patterns from the processing, storage and search patterns, the metabolical patterns from specific neural circuitry patterns, and specific excitations on the part of the neocortex from stress wave excitations.

a) General activity characteristics: In an examination of multi-channel recordings, the overall activity pattern is visible in variations of amplitudes, differing sharply from rhythmical bioperceptual patterns, which could be aligned with a short time distance (to 1.5 sec.) from the input of perceptual stimuli. The activity points could have various amplitudes and times of duration, and could be overlapped or could cease after the activity pattern, independent of the duration of the initial stimuli.

b) Storage pattern: Storage pattern can be recognized on multichannel recording (mostly in the EEC channel), with a characteristic triangular recording. After initial excitation, the amplitude diminishes gradually, ending on a different recording from the biological rhythm, and similar to the initial excitation record. When high speed is used, the slow change from stored to biological rhythm can be discerned (Bio-chemical chain).

c) Search pattern: When several high excitation peaks occur within the range of 0.5 to 1.6 second hrs., there is a high probability that an intensive search is happening within a close range in the neocortex. The search may or may not affect the storage pattern. In most of these cases, the bio-rhythm after the search shows distinctive differences, whether or not any storage has resulted from the search.

d) Stress wave pattern: There are basically two kinds of stress wave indications: on the EEC channel it is a gradually increaseing amplitude within a range of one second, creating a vivid triangular shape in the signal. The triangle usually ends in a longer activity on high amplitude. The second indication is usually visible on the EKG channel: it is a high variation of envelope curve (excluding the spikes of biorhythm in the EKG). These two variants (EEC and EKG) have specific co-incidence.

In both areas (input and processing) the decay of activity or decrease of the neural functions (fatigue) could be similar. The differences could be discovered either by:

a) increasing the amplification of the signal: in this case, biological rhythm will produce large vivid periodic patterns; or by

b) increasing the speed of the recording: in this case, shapes of the signal will be repeated with great similarities.

CONCLUSIONS

The above tests can be indicators for communication biometric research either into the impact of an information source, transmission conditions, or receiver characteristics. But, for each part of the information chain, the emphasis on input must take a different form. For example, if we are searching for an information source (film, TV program, display), the audience sample should be comparable to the actual situation, with medical check-ups and conditioning for laboratory tests. If transmission conditions (exhibition hall, auditorium, TV set) are tested, the controlled design of the environment will prevail. If receiver attitudes are tested, the size of sample, stratification and demographics should be emphasized.

Most of the tests in communication biometric research methodology are designed for direct help before and during the production of media materials. They serve the artist as tools to assist his own impressions, feelings, or estimates of an environment where the artist could not have direct experience. The tests could also be used, to a certain level, for job counselling and training purposes, to reveal the media skills, talents or abilities of cameramen, actors, directors, writers, and producers. The least productive use of the tests is post-production evaluation, namely for administrative (contractual) purposes. This function could easily be served by verbal, graphical or recorded tests, well-known from basic experimental psychology.

The main advantage of biometric tests is that they enable the artist to identify with a living sample of his future audience, and to predict the way these people will perceive the finished artwork (film, television program, exhibition), especially in pre-production periods where very little is known or clear about the finished media product. Tests of location for future shows of designs, sets, costumes, graphics and actors in rehearsal, give valuable information to the production team.

Another advantage of the tests is that they enable the management of a media network to conduct fast, repeated analyses of the audience, of its patterns and changes, before important decisions are made about new television programs or exhibitions. The main advantage of the tests is that they also enable program researchers to identify materials (pictures, data, words) with a known impact from numerous sources, and could generate enormous time and cost savings.

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Dr. Miroslav Malik is Professor of Communication Studies at Concordia University, Montreal.

EDITOR'S NOTE: The above paper is an abridged version of Dr. Malik's original contribution, which also covers physiological and psychological aspects of human information processing. The original paper, with comprehensive bibliography, may be sought from the author.

SECOND GENERATION ELECTRONIC TESTING TECHNOLOGY APPLIED TO TELEVISION EVALUATION

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ABSTRACT

This paper will present data from electronic testing sessions conducted throughout Canada in evaluating Canadian programming and commercials. Testing was conducted using two microcomputer-based evaluation systems developed in Canada: The PEAC system and the PROMPT system. The PEAC system uses a hand-held wireless microcomputer to track the reactions of audiences to programming as they view. The PROMPT system is an interactive system that questions individual viewers and, on the basis of their responses, selectively presents them with appropriate video material of further questions.

INTRODUCTION

Electronic testing represents computers and electronics collecting information from respondents during a radio, television or film presentation. This type of evaluation isn't new - it began in the early sixties. Specially-equipped theatres (ASI) or two-way cable television systems (QUBE) or dedicated telephone lines (VOXBOX) were used to collect information from respondents as they viewed test material. These systems were available in a limited number of sites throughout North America and many research specialists associated the use of the early technology with several important research constraints - non-representative sampling, logistical inflexibility, limited analysis capability and high cost.

Nevertheless, throughout the sixties and seventies, the television networks and major advertisers remained committed to electronic research to pretest material and diagnose reaction to it before going to broadcast. There were many reasons for this continued commitment to the technique. For many research specialists, the objective, quantitative approach, the unique moment-to-moment measurement capability, and the procedural standardization associated with data collection far outweighed the limitations associated with the technology.

The late seventies saw the broad introduction of microtechnology into our lives. A second generation of testing technology emerged, combining the initial appeal of the electronic testing concept (quantitative data, standardization of technique, fast turnaround, moment-to-moment response) with additional features designed to overcome the initial limitations associated with the early technology. These additional features included hand-held wireless response units, complete portability, implementation of complex research designs, and highly sophisticated analysis and data display capabilities.

SECOND GENERATION TECHNOLOGY

This review will concentrate on applications of two second-generation testing technologies - the PEAC and PROMPT systems.

The PEAC system is an electronic research tool designed to collect, analyse and display the reactions of hundreds of respondents to television, radio or film material. Respondents, typically in groups of 15 to 25, use hand-held calculator-like response units to register their moment-to-moment response to material as they view, to answer a variety of close-ended questions, and to indicate their demographics. In many cases, respondents review and discuss their group data, shown on a television screen in synchronization with replay of the test material. In format and duration, PEAC testing is similar to traditional focus group testing.

PROMPT is an electronic research tool designed to probe, in detail, an individual's response to television test material. PROMPT presents two television channels to the respondent, who can switch between channels depending on interest in the content. Following this, PROMPT presents an electronic questionnaire to the respondent, branching to further questioning or further television test material, depending upon the individual's previous responses. The questionnaire is presented on a television screen and respondents indicate their response choices and switch channels using a numeric key pad. In format and duration, PROMPT testing is similar to traditional mall intercept testing.

EXPLORING NEW DIMENSIONS OF ADVERTISING EFFECTIVENESS

The most exciting aspect of new testing technologies is the opportunity to measure reactions to television material in a different manner and, thus, explore new dimensions of media effectiveness. Both PEAC and PROMPT have been used to explore a number of different dimensions including appeal, comprehension, levels of stereotyping, production value, credibility, persuasiveness and levels of attention. However, two dimensions have emerged, overall, as the most frequently appropriate, most generalizable, and best understood measures developed on these electronic systems, to date. Both measures have high face validity and are applicable to a broad range of television material. The two measures have been labelled Spontaneous Response Index (SRI) and Engagement.

SPONTANEOUS RESPONSE INDEX (SRI)

SRI is measured using the PEAC system. Respondents are instructed to respond on a five-point scale from "very negative" to "very positive", using their hand-held response units. Instructions are as follows:

> "We want you to indicate how you FEEL about this television material on a moment-to-moment basis from "very positive" to "very negative". How you feel about it at any particular moment has something to do with whether you think the material is "good television", whether you think it is convincing, whether you understand the message, whether you enjoy it and whether you feel the material is directed at you; but it is not important that you understand why you feel the way you do, only that you indicate your momentary feelings on the response unit".

When testing SRI with advertising or program segments, test material is matched with control material and counterbalanced to control for positioning effects. The reasons behind a specific level of SRI at a specific point in the content of test material is interpreted by researchers who replay the moment-to-moment response in synchronization with the test material or it is explored through open discussion with respondents who review the test data with a group leader.

We have learned a considerable amount about SRI as a measure of television effectiveness. These findings will be discussed through a series of brief case studies as follows:

(a) SRI is a discriminating measure - with the same groups of respondents, and equivalent levels of prior exposure, different material performs differently (Case I).

(b) SRI can be both a general indicator of effectiveness and a diagnostic tool to identify problematic or beneficial elements of a program (Case II).

(c) SRI can be used to discriminate segments of a target audience or to explore the response of a specific segment of the target to test material (Case III).

(d) SRI is a particularly useful measure in predicting effectiveness of material involving "image", material that respondents find difficult to talk about, or target groups representing problematic respondent groups from a research standpoint. As a measure, SRI is relatively independent of language and literacy constraints (Case IV).

ENGAGEMENT

Engagement is the ability of test material to attract an audience in the context of competing television programming. Engagement is measured using the PROMPT system. The measure itself is adapted from distractor research in other areas of communications. A respondent is typically recruited in a mall and brought to a PROMPT station consisting of two videotape recorders controlled by a microcomputer and a television screen. The respondent sees only the television screen and a keyboard through which to enter responses. The following instructions are given:

> "There are two channels on this television set. You are about to see 8 to 10 minutes of short program segments complete with commercials. The two channels will sometimes be the same and sometimes different. If different, the programming on the other channel may be more or less interesting to you, just as is the case when you view television at home. Use the red button on the keyboard to switch channels whenever you feel the other channel might interest you more. Following the program, several questions will appear on the screen. Indicate your answers by pressing the appropriate keys on the keyboard".

The on-site computer tracks channel-switching between the two channels and switches the unknowing respondent to the test channel at the beginning of each test segment and control segment. In addition, the computer will allow a respondent to switch from selected control material but will not allow the respondent to switch from selected test material (these appear to be on both channels simultaneously). Following the channel-switching exercise, the respondent is presented with a series of questions and additional replays of test material exploring recall, communications, attitude and demographics. The exact sequence of questioning and test segment replays for each respondent is dependent upon the results of the channel-switching exercise and the responses to previous questions. In short, test and video branching is programmable.

Several points are worth noting in our experience with the "engagement" measure and follow-up measures implemented on PROMPT.

(a) Engagement is clearly a measure of targeting (Case I).

(b) Comparable measures of engagement taken at different periods in time provide a comparative measure which corresponds closely to many researcher's concept of "wearout" (Case II).

(c) The programmable nature of the technology can compensate for many of the constraints normally associated with close-ended questioning (Case III).

(d) A higher level of respondent involvement is required in PROMPT procedures in comparison to other individual interview techniques. Respondents are not intimidated by the technology. They treat the task very seriously, enter their own responses, and proceed at their own pace in responding (Case IV).

CONCLUSION

In both of the above cases, new technology has allowed us to explore new techniques for testing television content and to construct new dimensions of effectiveness without being burdened by constraints associated with earlier technology. The new technology is portable, programmable, adaptable, fast and inexpensive to implement. Whether or not these new technologies will have a significant impact on television research remains to be seen. The ultimate criterion is whether or not technology-dependent techniques of research and dimensions of effectiveness become accepted as new benchmark measures in the television industry.

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FORMATIVE RESEARCH IN RURAL EDUCATION

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ABSTRACT

For many media producers the world of audiovisual research is shrouded in mystery. They view media research and evaluation as a possible threat to their creative freedom. When the producer's goal is education for development, this attitude becomes self-defeating, for it denies him the opportunity to systematically check and refine his production's value for the audience. However, recent developments in formative research methodology have made it possible for producers and researchers to collaborate on a new and meaningful level (Baggaley, 1982). The present article illustrates the way in which research, evaluation and production efforts may now be integrated for the purposes of rural and third-world community development.

Many of the traditional obstacles to community development have been overcome at Memorial University of Newfoundland, where an ideal environment exists for a unique media research and production praxis. The Extension Service Media Unit has a long history of applying A/V communication technologies in a community development context. The 'Fogo Process' is internationally recognized as a methodology which allows people to control and shape their environments via film and videotape (Gwyn, 1972). As new technologies become available, this same philosophy continues to be applied.

An interest in the application of communication research in media production has existed for some time at Memorial's Institute for Research in Human Abilities. The development of the Institute's Program Evaluation and Communication Research Unit has brought media research and production personnel into closer contact; this has in turn led to an integrated approach to media development. Two recent projects illustrate the approach.

FORMATIVE RESEARCH IN THE FIELD

In the first project, Newfoundland fishermen were given the opportunity to evaluate an instructional film made for their benefit. The film 'A-1' was produced by MUN Extension Media for the Canadian Federal Government's Department of Fisheries and Oceans. The purpose of the film was to teach the best methods of selecting, handling and storing seal pelts, and thereby to raise the income derived by fishermen from the annual seal harvest. In addition to these instructional aims, the film added a a motivational component through music and scenic footage. An evaluation of the film by its intended audience was undertaken at the rough-cut interlock stage.

The evaluation was particularly crucial from the film producer's point of view given the controversial nature of the seal hunt, the intense and easily offended pride which sealers take in their work, and the wide cultural gap between the sponsoring agency and its audience. Consequently, the evaluation was conducted prior to a final screening for the sponsor so that the sealers' reactions could be made known.

Fishermen's Association meetings were arranged at Fleur de Lys and Triton, two sealing communities on the Baie Verte Peninsula, through an Extension Service field worker with long-standing involvement in the fishery. The fishermen's moment-by-moment opinions of the film were measured using an electronic technique discussed in a previous article (Baggaley, 1982). This technique employs a series of manual response units, programmed to record momentary changes in audience response. In the use of this highly sophisticated new system - known as the Program Evaluation Analysis Computer (Nickerson, 1979) - extreme care was taken to follow the basic rules established by the 'Fogo Process'; i.e., the fishermen would dictate to the producer, researcher and field worker whether or not the system was to be used in the evaluation. The sealers were told that the evaluation could comprise a) a simple discussion before and after the screening; and/or b) a written questionnaire after the film; and/or c) use of the PEAC system during the film. In openly presenting these options to the fishermen, the sophisticated technology was deliberately 'demystified'.

Although they had travelled 400 miles to the fishing community and were anxious to gather good data, the researcher and producer had to be totally prepared to keep the electronic hand-units in their packing case.

The knowledge that this was indeed their attitude enabled fishermen to make an unpressured choice. To the survey team's satisfaction at both meetings, the number of fishermen anxious to use the system was greater than the number of hand-units available. (Pilot tests indicated that the fishermen were happier in the use of a 2-rather than 4-point scale for GOOD to POOR. In the main part of the study they indicated their momentary changes in response to the film on two buttoms coded accordingly.) The questionnaire and an informal discussion were also used in both settings, and data relating to the extent and nature of the men's sealing experience were obtained for comparison with other responses. In addition, the sealers were asked to give an overall rating of the film on various attitude scales. Space was left on the form for additional questions which the audience could determine.

Forty fishermen participated in the study, and all gave a positive reaction to the evaluation process; they also expressed interest in receiving a report of the findings. A feedback report was sent to each one of them and to the sponsoring agency. It contained the following details.

Overall response to the film was very positive indeed (89% found it good, 11% average, 0% poor); (87% interesting, 13% average, 0% boring); (53% too short, 47% about right, 0% too long). A more important measure was the amount that the men felt they had learned from the film (37% a lot, 45% a little, 18% nothing). This response was inversely related to the amount of sealing experience reported (i.e., all those who reported learning nothing from the film claimed the most experience (10 years or more). Even though 63% reported learning little or nothing from the film, fully 82% reported that the film would help them to make more money.

That the film had promoted rather than offended the sealers' pride in their work, was evident from the electronically collected responses to moments in the film. Particular lines of narration written specifically for this purpose elicited spontaneous approval from a statistically significant proportion of the audience. For example:

> "If you haven't been out to the ice before, this film should give you a good head start. If you're an old hand, well, there may be a point or two worth picking up. So let's get down to business."

> "If you do these things, you'll be doing the job professionally, and sealing will provide a larger share of your year's income. As well, you'll be doing your part to ensure a good future for yourself and the whole industry."

There was a generally high response rate during all music sections of the film, and during sequences which showed activities most closely related to daily working conditions. There was no significant negative reaction during the killing and pelting sequences, or at any other point in the film. An attitude of indifference was evident during some graphic sections.

The latter findings were particularly important to the producer since they validated the film's motivational component. The producer's approach in this respect was later questioned by the film's sponsor, in view of the public controversy surrounding the seal hunt. Positive reflections of the sealing environment via scenes set to music, and sequences involving killing and pelting were challenged, but were vindicated by the clear and objective evidence of the sealers' positive response to these production elements. The research actually allowed the sealers to help determine the film's content and style. The fishermen's feedback report thanked them for this input, and summarized the film's impact thus:

> "We figure that for many of you the film was full of little 'reminders' about things you already know. It seems that the film provided a boost to the start of the season and perhaps a welcome change from what we usually hear about the seal hunt."

FORMATIVE RESEARCH IN THE CLASSROOM

The implications of this approach for media research and development in third world contexts have been raised by Baggaley (1982). The nonverbal nature and rapid feedback facilities of the computer-based methodology offer opportunities for unusually thorough analyses of a production with its audience. With this use of the methodology in mind, another field study was designed.

Ninety-five percent of the sealers had indicated that the film should be seen by a wider Newfoundland public. Many felt that the film should also be viewed outside the province. The producer felt that this film (with some narrative and visual changes) might be useful as a resource educational tool in the Newfoundland school system. Accordingly, it was presented to 20 high school students from across the province, aged 14-17 years; they were resident at a 3-week Fisheries Resource Camp held at Burin on the island's south coast.

A series of questions was designed to measure the students' attitudes to the hunt itself. Ten statements (e.g. "sealing should be banned" and "sealing is an exciting sport") were rated on a 5-point scale (strongly agree to strongly disagree) before and after the film. Certain statements were designed to reveal attitudes towards resource aspects of the hunt: "Harp seals are an endangered species", "Seals are a natural resource to be harvested", etc. Additionally, ten pre- and post-test questions were asked covering the film's main teaching points.

The pre-and post-test data and moment-by-moment reactions to the film were analyzed immediately, so that its effects on attitude and learning could be fed back to the students. Within fifteen minutes, an open and democratic discussion was initiated on this basis. Additional information on the film's impact was analyzed overnight, and the next morning students were left with printouts, graphs, charts and tabulations; these were used in a debate which continued at the resource camp throughout the week. As the field worker in charge of the camp, Leo Hanrahan, indicated, this methodology can clearly become "a tool for self and group analysis - to help people see themselves".

The major results of the study were as follows. The students' attitudes to the seal hunt controversy were already divided before the film was shown to them. The film had polarizing effects on the audience's attitude to the controversy itself, reinforcing views already held. However, factor analysis revealed that the students' attitudes towards the controversy were unrelated to their opinion of sealing as a resource industry. A third set of judgements related to the degree of skill required by the seal fishermen: after the film students were markedly more appreciative of the skills to be mastered. Attitudes to the hunt were evidently based on a sophisticated range of independent criteria.

From the producer's point of view, this was vital information. The economic benefits of seal fishing and the need to refine fishermen's skills were the two essential messages he had intended the film to convey. The research data proved that these messages had been communicated.

In common with the seal fishermen in the earlier study, the students also reacted positively to the sections of the film where music was featured. Certain students felt the killing of seals to be brutal; not surprisingly, these students reacted negatively to scenes of killing (Figure 1) and pelting. Relationships between these reactions and demographic data about the students (age, sex, family background, etc.) were clearly evident. The negative reaction to the scenes of killing, for example, was found peculiar to the girls in the audience from seal fishing families. These viewers were evidently sensitive not to the killing itself, but to its presentation on film. Yet the same scenes had no effect on the positive attitude of these students towards the seal hunt itself. This finding clearly demonstrates the need for thorough analysis of formative research data before production changes are contemplated.

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OVERALL TITLE: SEALING (BURIN FISHERIES CAMP)

RESTRICTED BY QUESTION #50 (SEX X FATHER OCCUPATION)

A= GROUP MEAN FOR MALES (N = 12)
B= GROUP MEAN FOR FEMALES/FATHER FISHERMAN (N = 4)
C= GROUP MEAN FOR FEMALES/FATHER NOT FISHERMAN (N = 3)

   I     I     I     I     I     I     I     I     I     I     I        TIME (4-SECOND
  Very               Fairly           Fairly                 Very         INTERVALS)
  Good                Good             Poor                  Poor             ↓

115.     .C    .     . B   .   A .     .     .     .     .     .115   --(7 mins. 40 secs.)
116.     .C    .     . B   . A   .     .     .     .     .     .116      TYPES OF SEAL
117.     .C    .     . B   . A   .     .     .     .     .     .117      BEING SHOWN
118.     .C    .     . B   . A   .     .     .     .     .     .118      - girls showing
119.     .C    .     . B   A     .     .     .     .     .     .119      most approval
120.     .C    .     . B   A     .     .     .     .     .     .120
121.     .C    .     . B   A     .     .     .     .     .     .121
122.     .C    .     . A   .     B     .     .     .     .     .122   --(8 mins. 08 secs.)
123.     .C    .     . A   .     .    B.     .     .     .     .123      SEAL KILLED BY
124.     .     .     . *   .     .     .     .     .     .B    .124      FISHERMAN
125.     .     .     . C A .     .     .     .     .     .B    .125      - major negative
126.     .     .     .   A . C  .     .     .     .     .B    .126      reaction by girls
127.     .     .     .   A . C  .     .     .     .     .B    .127      whose fathers are
128.     .     .     .   A . C  .     .     .     .     .B    .128      fishermen
129.     .     .     .   A . C  .     .     .     .     .B    .129
130.     .     .     .   A . C  .     .     .     .     .B    .130
131.     .     .     .   A . C  .     .     .     .     .B    .131
132.     .     .     .   A . C  .     .     .     .     .B    .132
133.     .     .     .   A . C  .     .     .     .     .B    .133
134.     .     .     .   A . C  .     .     .     .     .B    .134
135.     .     .     .   A . C  .     .     .     .     .B    .135
136.     .     .     .   A .     .  C  .     .     .     .B    .136
137.     .     .     .   A .     .  C  .     .     .     .B    .137
138.     .     .     .   A .     .  C  .     .     .     .B    .138
139.     .     .     .   A .     .  C  .     .     .     .B    .139   --(9 mins. 16 secs.)
140.     .     .     .   A .     .  C  .     .     .     .B    .140      FILM CONTINUES
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
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FIGURE 1 Fluctuations in moment-by-moment student response to a film on seal fishing.

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The producer was also able to use the electronic response data to test the film's ability to teach specific information. Learning gain from the film was found satisfactory; shifts towards the correct answer were observed in 8 of the 10 post-test questions. In one case, failure to learn the correct information was again directly linked with production technique. At the moment when the information occurred (on the sound-track), the viewers who did not learn it were responding negatively on the hand units. When an animated display of these reactions was synchronized with the videotape, it became clear that the attention of these viewers had been distracted from the sound-track by inappropriate visuals. The film's producer thus learns that he must re-edit the film at this point if he wishes to avoid this learning problem.

CONCLUSIONS

Potential uses of formative research techniques in community development and classroom situations have been illustrated via two studies. These offer a wide range of benefits to the rural development worker and teacher as well as to the media producer. Not surprisingly, the audience research technology described here is rapidly coming into use in the advertising world. At Memorial University of Newfoundland, we find it satisfying that the new research technologies can also be used to serve the community's immediate benefit, and to assist rural education and development efforts. We are gratified by the unique spirit of collaboration which has evolved at Memorial between research, production and field work personnel. The future benefits of the formative approach to rural education are exciting to anticipate.

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VISUAL BIASES IN TELEVISION CAMPAIGN COVERAGE

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ABSTRACT

In investigating television election campaign coverage, it has been almost exclusively verbal statements of journalists (Buss and Hofstetter, 1974; McLure and Patterson, 1974; Ruhland, 1976) and candidates (Graber, 1976; Weiss, 1976) that have been analyzed hitherto. All those means of representation which are specific to the TV medium, such as camera position, image cutting, illumination and sound, were not taken into account in most cases. The present investigation is an attempt to analyze the effects of certain camera and cutting techniques. For this purpose three studies were carried out:

1. An interview with cameramen who were considered expert in camera techniques, and who could point out the possibilities for positive or negative display of politicians.
2. A quantitative content analysis of the camera angles in presenting the two candidates for the office of the Chancellor of the Federal Republic of Germany in the 1976 elections, Helmut Schmidt (SPD) and Helmut Kohl (CDU).
3. A quantitative content analysis of all statements by journalists on positive and negative public reactions towards Schmidt and Kohl, together with a quantitative content analysis of the reactions towards Schmidt and Kohl, visually displayed in TV coverage.

STUDY 1

Interview of Cameramen

The interrogation of the cameramen was carried out by Willy Loderhose at the suggestion of Percy H. Tannenbaum in the summer of 1979 (Loderhose, 1980). All cameramen were from two regional stations of the two nation-wide TV channels (n = 116) and a random sample of all cameramen in the

Federal Republic of Germany (n = 200) were contacted. 151 of these cameramen returned the questionnaire duly filled in; others had died, moved to an unknown address, or were on a journey.

Nearly all the camermen (and it is justified to speak of 'men' because there was only one woman among the 151 persons interviewed), believe that "A camerman is able, using merely visual means, to present any person in a positive or negative way": 78 percent answered, "This is absolutely possible" to this statement, while 22 percent stated, "This might be possible". Only one of the persons interviewed stated, "This is hardly possible". What means would they use? The cameramen answered this question quite definitely: two thirds of them would film a politician whom they particularly respected at eye level; a quarter of them would film slightly from above or from below. Nobody, however, would choose a full top or bottom view (Table 1).

The opinions of the cameramen as to the effects of different camera perspectives were studied by the question: "Which perspective would you select to produce certain effects?" A list of six negative and six positive effects were presented to the cameramen. In each case, they were to tick off which perspective they would choose in order to produce the effect mentioned. It was not intended, with the aid of this question, to determine whether the effects were actually obtained - which is possible only by experimentation (Tiemens, 1969/70; Mandell and Shaw, 1972/73; Schulz, van Lessen, Schlede and Waldmann, 1976; McGain, Chilberg and Wakshlag, 1977; Davis, 1978) - but whether the replies to the first question were valid. The answers of the cameramen confirmed that a camera position at eye level is customarily used to achieve positive effects, while a full top or bottom view is mainly used to produce a negative effect. The only exception is the use of the full bottom view, to create the impression of 'power' (Table 2).

STUDY 2

Content Analysis of Camera Angle

The election campaign coverage of the two nationwide TV channels (ARD and ZDF) between April 1 and October 3, 1976, was next analyzed. The election took place on October 2. The analysis comprised eight political magazine

TABLE 1

Statements of cameramen regarding shooting techniques used to present a politician as positively as possible

Question: "Imagine that you were in a situation to make a shot of a person whom you find rather sympathetic, for instance a person of public life, or a politician you think highly of. This person is very nervous on the shooting day. His hands are in constant motion. How would you make this person appear on the screen? Which means of presentation would use use?"

- Possible answers -

Shot Sizes	%	Perspectives	%
Close Shot	38	Eye Level	66
Close-up	27	Slight Bottom View	19
American Shot	18	Slight Top View	
Close Medium Shot	9	Clear Bottom View	0
Detail Shooting	0	Clear Top View	0
No Statements	8	No Statements	10
Total	100	Total	100

Camera Movements	%
Static	53
Zooming	26
Camera Movement	11
Camera Pan	1
No Statements	9
Total	100

Most frequent reply to an open additional question: 'Lighting'

TABLE 2

Statements by cameramen on the intended effects of using various perspectives

Question: "Perspectives can show rest, excitement, weakness, power, etc. What would you like to attain with bottom or top view shots? Please tick off the shooting technique corresponding to your opinion".

	Top View		Eye Level	Bottom View	
	clear %	slight %	view %	slight %	clear %
Positives					
Rest	9	16	54	5	1
Sympathy	3	8	60	11	0
Ease	5	12	46	14	1
Power	4	1	11	15	51
Liveliness	3	8	36	25	3
Skill	8	11	36	19	2
Total	32	56	243	89	58
Negatives					
Excitement	11	9	7	31	22
Antipathy	15	13	3	8	44
Tenseness	22	14	9	15	16
Weakness	52	16	5	6	5
Emptiness	40	12	15	3	11
Clumsiness	19	23	13	10	11
Total	159	87	52	73	109

n = 151

series on the two channels and all special election telecasts. These magazine series were telecast either every week or every other week. In character they roughly correspond to "60 Minutes" on CBS Television.

In the content analysis, a difference was made between reports, contributions and shots. A report in this context, is the representation of a subject of limited content, which can consist of several different contributions such as interviews and speeches. A report is usually presented and/or terminated by a moderator. A contribution is a technically homogeneous part of a report. A distinction was made between the following types of contribution: speeches, street interviews, studio interviews, rounds of talks and other types. A report can consist of one or several contributions concerning one or several politicians. Each contribution of each politician was coded on a separate code sheet. Several formally equal contributions,on one politician in different phases of a report, were combined into one contribution.

A shot is a representation of a person defined by the camera position, size of shot and direction of shooting. A distinction was made between three camera positions - clear bottom view, clear top view, eye level; three directions of shooting - from the front, from the side, and from the rear; and six shot sizes - detail shooting, close-up view, close shot, American shot, close medium shot and full-length shot. Slight bottom and top views were coded as eye level, since, on the grounds of the opinion poll results, no different intentions or effects could be expected. If one of the three characteristics is modified by zoom, pan shot or cut, this results in a new type of shot. In the case of zooming and moving the camera, the beginning and end of the motion was coded. The reports were coded by four teams consisting of two people each. After a training period of one week, the conformity between two teams each amounted to a minimum of .70 in all categories presented.

The two TV channels showed the candidates in their election campaign coverage in 795 shots. (Surprisingly, one channel (ARD) showed the challenger Kohl more frequently than governing Federal Chancellor Schmidt. However, the Federal Chancellor was, most probably, shown more frequently on the screen in other telecasts not directly concerned with the election.) In the great majority of shots the camera was at eye level or slightly below or above. There were, however, distinct differences in the presentation of Schmidt and Kohl: whereas Schmidt was shown in only 31 shots from the more unfavourable full bottom or top view, Kohl was presented in 55 shots from these perspectives. If the proportion of negative shots in the total number of shots is calculated, it becomes clear that the ZDF (reputed to be conservative) presented the conservative candidate, Kohl, in a more negative manner than the progressive Chancellor (Table 3).

TABLE 3

Number of shots from different perspectives, in the presentation of two top candidates, Schmidt and Kohl by ARD and ZDF, from April 1976 to the October'76 election

	ARD1)		ZDF2)		Total3)	
Shots	Schmidt (n=125) %	Kohl (n=178) %	Schmidt (n=248) %	Kohl (n=244) %	Schmidt (n=373) %	Kohl (n=422) %
Clear Bottom View	7	9	0	3	2	5
Clear Top View	9	6	4	9	6	8
Eye Level	84	85	96	88	92	87
Total	100	100	100	100	100	100

The differences between clear bottom and top views on the one hand, and eye level on the other, were tested by the Chi-square test:

1) n.s.
2) $p < 0.01$
3) $p < 0.02$

During speeches by the politicians, shots from a clear bottom view - as well as other techniques such as close-ups from the front with only a slight bottom view - will frequently lead to the speaker's face being more or less hidden by microphones and thus distorted. To analyze the extent to which the speaker's face is covered by microphones, a classification in categories has been developed which distinguishes between short-term and constant, as well as slight, medium and intense hiding of faces. A face is constantly hidden if it continues to be covered up during the whole shot, while a short-term hiding occurs if it is caused temporarily by the speaker moving his body and/or head. In the case of a slightly hidden face, the chin is only insignificantly covered up; during medium hiding the mouth is hidden; in the case of intense hiding the chin and mouth and, to a certain extent, the nose are hidden. The abovementioned magazine and special telecasts were analyzed using this classification in categories. Although the two TV channels shot Schmidt much more frequently with his face constantly hidden by microphones than Kohl, this hiding was predominantly of a slight (31%) or medium (45%) nature and rather seldom intensive (24%). On the other hand, there was no slight hiding of Kohl's face at all and relatively little medium hiding (28%), whereas in more than two-thirds of all cases (72%) Kohl's face was nearly completely hidden by microphones at least up to the nose (Table 4).

The unfavourable presentation of Kohl from the worm's-eye and bird's eye views, and the covering up of his face by a battery of microphones, could be the consequences of unfavourable conditions created by the CDU, his own party. The CDU had, as can be assumed, specified the cameramen's location, and these locations were unfavourable. The cameramen were unable to supply better shots since they had no choice. This presumption can be checked by a simple analysis. Most probably the CDU would not systematically have assigned to the ARD other or better camera positions than to the ZDF. A camera position can most clearly be recognized by its shooting direction. Consequently, Kohl should, if the assumption is correct, have been shot by ARD and ZDF with the same frequency from the front as from any other viewpoint. This assumption, however, is wrong. ZDF shows Kohl significantly more often from the front than does ARD. The cameramen were nevertheless able, as is revealed by the analysis, to choose their positions within certain limits - and this was actually done in a different way by ARD and ZDF. Therefore, the assumption that the cameramen had not been able to supply better shots, since their locations had been marked in advance, can be ruled out as an explanation

TABLE 4

Number of shots during which the faces of the two top candidates, Schmidt and Kohl, were constantly hidden by microphone in ARD and ZDF telecasts, from April 1976 to the October '76 election

	ARD[1]		ZDF[2]		Total[3]	
SHOTS	Schmidt (n=16) %	Kohl (n=5) %	Schmidt (n=22) %	Kohl (n=13) %	Schmidt (n=38) %	Kohl (n=18) %
Slightly (a small portion of the chin)	56	0	14	0	31	0
Medium (the whole chin and part of the mouth)	31	80	54	8	45	28
Heavily (whole chin and mouth, the nose at least partly)	13	20	32	92	24	72
Total	100	100	100	100	100	100

1) and 2) No significance test owing to the small number of cases

2) $p < 0.01$

of the differing presentation of Kohl and Schmidt. Moreover, the analysis reveals why Kohl has been presented, particularly in the ZDF channel, so frequently hidden behind and distorted by microphones: the ZDF cameramen have stepped aside less frequently than the ARD cameramen to avoid Kohl being covered by microphones. On the other hand, they did this even more frequently than the ARD cameramen when shooting Schmidt, unless the ZDF journalists and cutter girls had systematically selected the better or worse shots from the total number offered (Table 5).

TABLE 5

Number of shots in the presentation of the two top candidates, Schmidt and Kohl, from various shooting directions on the ARD and ZDF channels

	Schmidt[1)]		Kohl[2)]	
	ARD (n=125)	ZDF (n=248)	ARD (n=178)	ZDF (n=244)
SHOTS	%	%	%	%
From the front	73	69	72	80
From the side/ From the rear	27	31	28	20
Total	100	100	100	100

1) n.s.

2) $p < 0.05$

STUDY 3

Analyses of Public Reactions

Election campaigns are ritualized conflicts with the aim of gaining approval for persons and programs. A candiate who meets with public approval during his campaigning tours has a good chance of being elected, whereas a candidate who is consistently seen as disapproved of by the public has only a very slim chance. Therefore, reports on approving or disapproving reactions of the public are, simultaneously, commentaries on the successes or failures of the campaigners (Baggaley, Ferguson and Brooks, 1980, pp. 3-32, 50-52).

The reactions of the public towards Schmidt and Kohl were investigated in the following ways. On the one hand, verbal statements on the public's reactions were obtained from the journalists; on the other, the visual displays of the public's reactions were analyzed. All statements by journalists on public reaction - independent of the shots - and all shots in which public reactions were displayed visually, were coded. The reason for the selection of different recording units was that journalists frequently give their commentaries in a few shots only, while reactions by the public are shown visually in a great number of differing shots.

The positive public reactions were determined with the aid of six categories:

1. Acoustic, symbolic approval (applause, etc.).
2. Acoustic approval as to contents (acclamations, approving statements).
3. Visual approval (symbols, inscriptions, gestures).
4. Successful interactions between candidate and public.
5. Attention, interest of the public.
6. Agreement among the public.

The statements of the journalists on public reactions were classified according to these categories. In their election campaign reports, the journalists of the two TV channels commented surprisingly seldom on positive public reactions. They mentioned somewhat more frequently positive reactions to Kohl than to Schmidt. The differences, however, are not significant (Table 6).

The number of shots in which positive public reactions were visually displayed exceeded the number of statements on positive public reactions by a factor greater than ten. Thus the shots offered a much greater amount of information than the statements. However, they gave the same impression to the audience: positive reactions of the public to Kohl were a little more frequent than to Schmidt (Table 7).

The negative public reactions were also established with the aid of six categories:

1. Acoustic, symbolic disapproval (whistling, booing).
2. Acoustic disapproval as to contents (acclamations, verbal criticism).
3. Visual disapproval (symbols, inscriptions, gestures).
4. Unsuccessful, inadequate interactions.
5. No interest, inattention.

TABLE 6

Number of statements by journalists as to positive public reactions to Schmidt and Kohl on the ARD and ZDF channels, from April 1976 to the October '76 election

	ARD		ZDF		Total	
Verbal statements by journalists	Schmidt n	Kohl n	Schmidt n	Kohl n	Schmidt n	Kohl n
Statements on public approval of the candidate (applause, acclamations, gestures, symbols)	4	7	3	3	7	10
Statements on a successful interaction between candidate and public	2	5	1	1	3	6
Statements on the attention, interest of the public	3	2	1	4	4	6
Statements on public agreement with the candidate	0	0	0	0	0	0
Statements on the unanimity of the party	0	0	0	0	0	0
Positive general statements on the relations between the candidate and the public	0	0	1	1	1	1
Total	9	14	6	9	15	23

TABLE 7

Number of shots indicating positive public reactions to Schmidt and Kohl on the ARD and ZDF channels, from April 1976 to the October '76 election

	ARD		ZDF		Total	
Visually presented reactions of the public	Schmidt n	Kohl n	Schmidt n	Kohl n	Schmidt n	Kohl n
Acoustic, symbolic approval (applause)	49	82	87	93	136	175
Acoustic approval as to contents (acclamations)	2	3	1	0	3	3
Visual approval (gestures, symbols)	2	14	3	11	5	25
Successful interactions between candidate and public	19	34	16	8	35	42
Attention, interest of the public	9	16	33	42	42	58
Agreement within the public, among followers	0	1	0	0	0	1
Total	81	150	140	154	221	304

6. Conflicts among the public.

The statements of the journalists as to public reaction were also determined with the aid of these categories. In their election campaign reports the journalists of the two TV channels commented less often on negative than on positive public reactions. Negative reactions to Kohl were mentioned somewhat more frequently than those towards Schmidt. However, the incidences are so insignificant that no trend can be observed (Table 8).

The number of shots in which negative public reactions were shown again exceeded the number of statements on negative public reaction by a factor of more than ten. In contrast to the journalists' statements, the shots gave a rather biased impression of the public's reactions. Both TV channels showed considerably more frequent shots containing negative reactions of the public to Kohl than to Schmidt. Thus, the visual coverage contained a clear bias. This bias was in flagrant contradiction to the verbal statements of journalists (Table 9).

If the statements of journalists on negative and positive public reactions are taken as a whole, there are no significant differences between Schmidt and Kohl. In both cases, the proportion of statements suggesting negative public reactions, is similar. However, the visual presentations of negative and positive public reactions are quite different. The proportion of shots showing negative public reactions is significantly higher for Kohl than for Schmidt. Thus Schmidt was presented as the candidate who always received public approval, whereas Kohl was displayed as the candidate who generated relatively frequent public disapproval (Table 10).

SUMMARY AND CONCLUSIONS

The content analysis of the visual presentation of the two candidates for the office of the Chancellor of the Federal Republic of Germany in the 1976 election campaign, reveals that the CDU/CSU candidate Kohl was more frequently given a negative image on the screen than the SPD candidate Schmidt. Kohl was more frequently shot from unfavourable camera perspectives. His face was more often partly hidden by microphones. Negative reactions of the public were displayed more often.

TABLE 8

Number of statements by journalists as to negative public reactions to Schmidt and Kohl on the ARD and ZDF channels, from April 1976 to the October '76 election

Verbal statements by journalists	Schmidt n	Kohl n	Schmidt n	Kohl n	Schmidt n	Kolh n
Statements on manifestations of public disapproval, objection, criticism of the candidate	1	2	0	2	1	4
Statements on inadequate or disturbed interactions between public and candidate	0	2	0	0	0	2
Statements on inattention, lack of interest of the public	0	0	0	0	0	0
Statements on conflicts, disagreements among the public	0	0	0	0	0	0
Statements on conflicts and disagreements within the party	1	0	0	0	1	0
Negative general statements concerning the relations between the candidate and the public	0	0	0	0	0	0
TOTAL	2	4	0	2	2	6

TABLE 9

Number of shots indicating negative public reactions to Schmidt and Kohl on the ARD and ZDF channels, from April 1976 to the October '76 election

	ARD		ZDF		TOTAL	
Visually presented reaction of the public	Schmidt n	Kohl n	Schmidt n	Kohl n	Schmidt n	Kohl n
Acoustic, symbolic disapproval (whistling, booing)	0	12	1	42	1	54
Acoustic disapproval as to the contents (acclamations, criticism)	0	1	1	8	1	9
Visual disapproval (gestures, symbols)	0	8	0	0	0	8
Inadequate or unsuccessful interactions between candidate and public	0	1	3	23	3	24
Inattention, disinterest of the public	0	1	2	1	2	2
Conflicts within the public, among followers	0	2	0	0	0	2
TOTAL	0	25	7	74	7	99

TABLE 10

Visual displays of positive and negative public reactions to Schmidt and Kohl

	ARD1)		ZDF2)		Total3)	
	Schmidt (n=81) %	Kohl (n=175) %	Schmidt (n=147) %	Kohl (n=228) %	Schmidt (n=228) %	Kohl (n=403) %
Positive	100	86	95	68	97	75
Negative	0	14	5	32	3	25
Total	100	100	100	100	100	100

1) $p < 0.01$

2) $p < 0.01$

3) $p < 0.01$

The television coverage of the election campaign had a visual bias. On the other hand, no tendency could be found in the verbal statements of the journalists concerning the candidates, the reactions of the public to them, and individual political subjects (Kepplinger, 1979). How can these facts be explained?

The TV channels of the Federal Republic of Germany are obliged to telecast a balanced program. Therefore, they are not supposed to give one-sided support either to the parties in power (SFD and FDP) or their candidate, or to the opposition parties (CDU and CSU) or their candidate. However, the political opinions of the TV channels were by no means balanced; some 70 percent favoured the SPD or FDP and only 20 percent favoured the CDU and CSU, while the rest were undecided or did not express a preference for any party (Kepplinger, 1980). In contrast to the general population, the majority of journalists (76%) three months before the election were of the opinion that Schmidt would win. At this juncture, however, Kohl still had the same number of followers as

Schmidt, as was revealed by opinion polls (Noelle-Neumann, 1980, p.233).

If the results of the content analyses are considered in this context, the following interpretation presents itself. The TV journalists endeavoured to give a balanced presentation of the election campaign in their verbal statements. In this connection, they accurately complied with the program target of the TV channels since the verbal content of the reports were analyzed and checked by the management of the stations and the political parties. However, with the aid of visual techniques, the TV journalists presented - deliberately or unconsciously - the two candidates as they actually saw them. Since they considered Kohl a poorer politician than Schmidt, they frequently accepted more unfavourable shots of him. Since they viewed Kohl with disfavour and expected him to loose the election, they showed negative public reactions to him more frequently. The opinions of the journalists could, in this connection, be displayed with relative freedom since the video coverage was exactly analyzed and checked neither by the management nor by the parties. This tendency was more pronounced at the ZDF since the management of this channel is more conservative than that of the ARD. The journalists could articulate their political opinions by spoken commentaries even less than the ARD, and therefore used the means of 'visual commentary' more frequently. The verbal statements of the journalists thus reflected on both channels' professional norms, while the visual displays showed the political opinions of the journalists.

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